

The Nineteenth Charles V. Chapin Oration . . .

ANTIBACTERIAL AGENTS: USES AND ABUSES IN TREATMENT AND PROPHYLAXIS*

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IT IS INDEED a source of great personal pleasure and satisfaction to be chosen by your Committee on Scientific Work and by its distinguished chairman, my good friend of many years, Doctor Alexander M. Burgess, to give the oration in honor of this state's and one of America's greatest and most respected figures in medicine and public health. Doctor Burgess himself is a living example of the dedication to truth and scientific principles, and of the devotion and unstinting efforts in behalf of the improvement of medical practice and public health which characterized Doctor Charles V. Chapin, the man to whom we thus pay homage tonight.

It is a further source of great satisfaction to be added to the list of outstanding physicians, investigators and public health workers who have been similarly honored in previous years. They include some of my own teachers, colleagues and friends with whom I have been privileged to work and who likewise, by word and deed, have exemplified the teachings of Doctor Chapin. Moreover, the opportunity offered by this invitation to glance back briefly at some of Doctor Chapin's activities and writings and to learn a little about the outstanding character and qualities of that man, has given me added dividends of pleasure and inspiration. This has also helped me to understand and appreciate some of the background of how you here have been able to maintain such a high standard of medical practice in this community and in its hospitals.

Before embarking on the subject of my talk, I cannot resist the temptation to take advantage of this occasion to express a long-held conviction of mine which I know is shared by many of my colleagues. When one of them, the late Reginald Fitz,

chose in his Chapin Oration in 1944, titled *Forecast by Numbers*,¹ to discuss before this Society the future needs of our country for more physicians and for more medical schools properly equipped to provide such physicians, I could not help but feel that he was taking a similar advantage of his opportunity to express the same conviction and in a subtle way to carry a message to his audience. He, like myself, knowing this community and its physicians, felt quite keenly that although this is a relatively "small city in the smallest state," it is nevertheless ideally suited for the establishment of a new medical school to round out its position as a great medical center.

For in this city and state are several fine institutions of learning including some of America's great universities with strong departments in areas directly or indirectly related to medical interests. There is in this community a tradition for excellence, integrity and devotion among its physicians, and among its public health workers, a trait which constitutes the essence of a fine clinical faculty and which, with the intellectual stimulation that comes from proximity and association with the universities, should help to attract and keep additional scientists and physicians of high caliber to build and sustain very creditable preclinical and clinical departments.

You also have here a number of fine, well-equipped and well-staffed hospitals to which undergraduates, even from that great medical Mecca somewhat to the north of here, have been more than pleased to make pilgrimages to obtain part of their clinical training. Many of them seem to have found their experience here sufficiently stimulating and rewarding to be willing to return for post-doctoral training and then to remain to practice among you. I know of no place among the many in New England which have been suggested as possible sites for a new medical school that is more suited. Moreover, the spirit of Doctor Chapin which pervades this community, both its medical and lay members, should certainly serve to overcome the well-known but not insuperable material difficulties.

*Delivered at the 149th Annual Meeting of the Rhode Island Medical Society, at the Medical Library, Providence, Rhode Island, May 10, 1960.

The announced title of my talk may have misled you to expect a rather long and detailed exposition of the properties of the generally available chemotherapeutic and antibiotic drugs and their acceptable as well as improper uses both in therapy and prophylaxis, with perhaps a summation of the results of such uses and of the untoward effects that have been encountered. However, I feel that this is neither the time nor the place for such an exposition, nor do I feel justified in taxing your patience and indulgence unduly at this late hour—particularly since you still have a long and interesting program for tomorrow's meetings. I shall instead limit my remarks largely to a summation of the current status of two aspects of antimicrobial therapy that have interested me recently, namely the therapeutic uses of antibiotics in combinations and the prophylactic uses of antimicrobial drugs in general.

These two subjects, perhaps more than any other in this important field, represent areas for searching inquiry and for continuous surveillance and scrutiny in the Chapin spirit. For it is in these areas that the application of antimicrobial drugs requires intelligence, honesty and objectivity in order to differentiate between what are hopes and what are facts, between expectations and demonstrated results, between what those with vested interests want us to believe and what has actually been shown to be true.

Antibiotic Combinations

The practical problems of antibiotic combinations may be posed for convenience as two general problems: 1) What are the advantages and disadvantages of using more than one drug at a time in the treatment of any given infection? 2) Are there any antibiotics now available or that could be formulated, for dispensing in ready-made combination that would serve a good and useful purpose, or, contrariwise, are there any now available which the physician should be discouraged from using? To each of these questions there should follow Chapin's inevitable one, namely, Why?²

Some of the basic principles of the use of more than one drug and the results of tests of their effects *in vitro* and in experimental infections of animals, have been reviewed by Jawetz,³⁻⁶ Dowling⁷ and others.⁸ Results obtained by different workers have been irregular and sometimes conflicting because of differences related to the drugs, the organisms, the animals or the methods of administration used or depending on media and other conditions of cultivation in the *in vitro* tests. Perhaps the widest discrepancies have been in tests with different strains of staphylococci and sometimes even in experiments with individual strains or in different experiments by the same observers.

Clinical reports on the relative effectiveness of single active drugs and of the same drugs used in combinations in any significantly large group of comparable cases are not available and, indeed, studies for this purpose are almost impossible to devise except under unusually favorable conditions. This is due to the wide variations among patients so that large numbers of similar cases are required to permit assessment of all the variables that may influence the results. It may nevertheless be possible to make such studies under co-operative programs set up in many hospitals by different groups of investigators as has been so successfully demonstrated by the Veterans Administration's Co-operative Studies on the Chemotherapy of Tuberculosis, and more recently for other diseases, by the Veterans Administration and also under the auspices of the U. S. Public Health Service. Because of the difficulty in obtaining reliable answers, it is not surprising that some commercial interests have taken full advantage of this situation to exploit some theoretically possible advantages which have not been proved and perhaps cannot be in the clinic or in individual practice.

It is possible to list certain clinical and bacteriological situations in which it is reasonable, on theoretical grounds, to expect better results from the use of more than one drug than from each agent alone, but for which there are, unfortunately, no supporting clinical data. The most obvious situation is that of a mixed or complex infection; the use of a combination of drugs each of which is specifically directed against one or more bacterial components of the infection would seem logical, particularly when the different organisms are each present in moderate or large numbers and it is not possible to distinguish which of them is and which may not be actually responsible for or contributing to the infection. This might be recommended particularly for mixed infections of burns or other wounds of the skin, or in body cavities where poorly absorbed drugs, each with a limited spectrum of activity could be used topically. Systemic therapy with more than one agent may be required in mixed infections of the urinary tract where each of the organisms may be playing a role. In respiratory tract infections it may be more difficult to establish the pathogenic role of certain organisms that may be present as commensals, especially if they are the common and usually harmless residents of the upper respiratory tract or of the bowel; treatment directed against such organisms may be superfluous, or the elimination of some of them may encourage the multiplication of other resistant ones to the point where they may become pathogenic.

It is important, therefore, even when multiple organisms are present, to use discretion and to

avoid giving drugs only because of the bacteriological report. It is essential to ask two additional questions with respect to each of the organisms that are found: 1) Is this organism playing a role in the infection? 2) If it may be a contributing cause of the infection, can the particular drug or drugs given in the proposed manner be expected to influence the infection in this particular situation. These questions are, of course, fundamental for the therapy of all infectious diseases. The answers to these questions presuppose the help of a good bacteriological laboratory but they are just as pertinent when laboratory help is not available, for the physician must then himself make some simple test such as a stained smear, or under even less favorable conditions, he must make the most intelligent guess he can and then act on it.

Combinations of drugs have been recommended to reduce the chances of developing resistance to the important agents that are active against the principal cause of the infections under treatment. The basis for such use of combinations is the genetic principle that presupposes a given mutation rate to resistance for any organism exposed to a single drug. When more than one drug is used the mutant to the first will be normally susceptible to the second and really different drug, and one would then expect the mutation rate to the two drugs when used simultaneously to be the product of the rates for the individual ones. The use of any combination for this purpose, however, requires first that the organism is one that is known to acquire resistance to the antibiotic under the conditions in which it is used and secondly that the organism be initially susceptible to each of the drugs in the combination chosen, for if it is already resistant to one, the pair can be expected to have no more effect than the second drug to which, alone, the organism is still sensitive, and mutations to resistance against the latter may be expected at the normal rate. It is also important, in this connection to consider the fact that chemically related drugs, for example, the various sulfonamides, the different forms of penicillin, and of streptomycin, the tetracycline analogues, the entire group of erythromycin-like drugs (including carbomycin, oleandomycin, spiramycin and leucomycin) and the neomycin-like drugs (including kanamycin and paromomycin) show varying degrees of cross-resistance *in vivo*, and complete cross-resistance when exposed *in vitro* and therefore all the members of each group should be considered as a unit and one should not be substituted for another of the same group to which an organism is resistant or even partially so.

This principle of inhibiting resistance by combinations of drugs can readily be demonstrated *in vitro* with many organisms and many combinations of antibiotics under certain specific conditions of

cultivation. The results, however, may be quite variable with different strains or when the conditions of the experiments are changed, and this may account for divergent results reported from different laboratories. This principle should be applicable primarily, if not exclusively, in situations where either the organism is highly adaptable to many antibiotics, as exemplified by staphylococci or tubercle bacilli, or where the antibiotic is one which rapidly induces resistance in many different organisms, or for which there already are naturally resistant variants, as exemplified by streptomycin. In addition to the latter, erythromycin (and probably all of its chemically related antibiotics, some of which I have already enumerated) as well as novobiocin also have the property of rapidly producing resistance in staphylococci and in certain streptococci. These antibiotics, namely streptomycin, the erythromycin group and novobiocin, should, therefore, never be used alone, particularly in hospitals because of the likelihood of spreading the resistant strains of staphylococci that develop and because of the resulting loss of effectiveness of these drugs when prolonged treatment is required. Moreover, the use of more than one drug does not entirely prevent the emergence of resistance in surviving organisms; it only delays its appearance, but this of course may be crucial where treatment must be prolonged.

Use of Combinations of Antibiotics

It is also important to point out that many of the common and important bacterial pathogens have thus far shown no evidence of significant increases in resistance against most of the available and effective antibiotics. It follows, therefore, that the use of combinations of antibiotics for avoiding resistance could not be justified in the treatment of infections caused by such organisms. Thus, there is no acceptable evidence that there are any pneumococci, hemolytic streptococci, the viridans group of streptococci, meningococci, or gonococci that have become significantly increased in resistance to penicillin, which remains the most active agent for infections with these organisms and the additional use of other antibiotics for such infections is obviously superfluous.

Recently, however, it has been shown that during penicillin treatment of hemolytic streptococcal infections, notably scarlet fever, the streptococci have not been completely eradicated in many cases by the usual course of 7 to 10 days of therapy with previously effective doses; as a result, relapses and suppurative complications have occurred in such cases. This has been found to be related to the concomitant presence of large numbers of penicillin-resistant and penicillinase-producing staphylococci which may be inactivating the penicillin at the site

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where the streptococci are residing, thus permitting the latter to survive even though they retain their susceptibility to penicillin. Under such circumstances, the additional use during the first few days of another antibiotic to which the staphylococcus is also sensitive in order to inhibit the multiplication and penicillinase-production of the staphylococcus should permit eradication of the streptococcus by the penicillin; the antistaphylococcal drug may or may not also exert an added antistreptococcal effect.

While this limited protection against the development of resistance has been demonstrated in numerous organisms *in vitro*, there are fewer reports in confirmation of the effectiveness of antibiotic combinations in experimental infections. Moreover, in clinical practice, although multiple drugs have been very extensively used in many infections, their effect in inhibiting the emergence of resistant strains has been clearly demonstrated only in the treatment of tuberculosis among patients in whom organisms persist, especially in large cavities, and in which the development of resistance in tubercle bacilli to streptomycin or to isoniazid is definitely delayed by the concomitant use of para-aminosalicylic acid. Interestingly enough, PAS seems to provide greater protection against resistance to streptomycin than does isoniazid in spite of the much greater activity of the latter, presumably, but not necessarily, because resistance develops much more rapidly to isoniazid than to PAS. The use of chloramphenicol to protect against the acquisition of resistance by staphylococci against erythromycin or novobiocin, at least *in vitro*, is also more effective than other more active drugs, such as penicillin or tetracycline because of the slower development of resistance by the staphylococcus to chloramphenicol.

One important result of the use of combinations of antibiotics, especially when they provide a broad coverage that encompasses many of the organisms constituting the so-called normal flora, is the emergence into prominence of new organisms, often those which are normally essentially saprophytic, and these may then multiply to the point where they become pathogenic and invasive. Thus, strains of *Proteus*, *Pseudomonas*, *Aerobacter* or of *Monilia* may produce superinfections in surface wounds, or in the alimentary, urinary or respiratory tract of patients under treatment with multiple antibiotics; these organisms usually are resistant to all of the antibiotics that have been administered to the given patient and, in hospitals, often to all of those agents that are used intensively within that hospital.

The numerous reports of the results of *in vitro* tests of combinations of antibiotics have indicated that most strains of certain species of bacteria and

occasional strains of others, are killed more rapidly and by much smaller concentrations of two antibiotics than by multiples of those concentrations of each one when used individually; this is generally referred to as synergism. A significant proportion of enterococci exhibits such synergism when exposed to penicillin plus streptomycin, and it has also been demonstrated with occasional strains of staphylococci exposed to various combinations of antibiotics. The opposite effect, namely, a significant reduction of the activity of an effective antibiotic by the addition of another (antagonism) has also been observed but much less frequently. For the most part, each antibiotic exerts its effect independently. I shall not bore you with details of studies in our laboratory which have dealt only with *in vitro* effects of certain antibiotic combinations and with comparisons of the antibacterial action of serum of the same individuals after ingestion of various antibiotics singly and in pairs.⁹⁻¹⁵ Briefly, none of these studies has given any indication of the value of any of the pairs of antibiotics that have been recommended beyond that attributable either to the more active component alone, or to the additive effect of the two. Moreover, the supporting evidence for the recommendations of these combinations, which have been reviewed in each instance, were often difficult to interpret or accept.

Clinically, the enhanced effect of combined therapy has been clearly demonstrable in very few types of infection, namely, 1) with penicillin plus streptomycin in the treatment of enterococcal endocarditis, and possibly in occasional cases of subacute bacterial endocarditis due to strains of *Streptococcus viridans* that are not highly sensitive to penicillin alone; and 2) in brucellosis in which streptomycin plus one of the tetracyclines reduced the number of bacteria recoverable in the spleen of guinea pigs more rapidly; this combination also appears to reduce the duration of treatment required for cure of human infections when compared with each of these antibiotics used alone. In brucellosis, it has been shown more recently that similar favorable results may be obtained with a tetracycline alone given over a period of six weeks, whereas only two or preferably three weeks are generally required to produce lasting results when streptomycin is added.¹⁶

In the treatment of staphylococcal infections, especially those acquired in the hospital and resistant to the drugs most widely used in that hospital, combinations of antibiotics may be required, but in general they must each be different from those to which the causative organism is resistant individually, *in vitro*. However, an occasional strain may show a sufficiently greater effect from some particular combination of antibiotics, to one con-

stituent of which it may be slightly or moderately resistant, that the latter may prove useful in treatment when used in that particular combination. There are reports, for example, of cases in which massive doses of penicillin had an enhancing effect on other antibiotics when the staphylococcus was moderately resistant (to ten units or less), but in our own experience, I have not encountered any serious case of infection due to a staphylococcus that is highly resistant to penicillin *in vitro* and in which massive doses of that antibiotic have had any lasting beneficial effect. It has always proved more useful to resort to some less commonly used antibiotics to which the organism is more sensitive.

The clinician may sometimes have to resort to antibiotic combinations in desperately ill patients when, in his clinical judgment, it is not wise to postpone treatment and there are alternate possible etiologic agents which require different drugs. In such a situation, the use of the drugs required for each of the possible causative organisms may be desirable, provided that sufficient materials are properly taken and submitted for bacteriological study before the treatment is begun in order to identify the actual cause; therapy can then be adjusted when the bacteriological results become available and the condition of the patient warrants.

It has been claimed that the incidence and severity of untoward effects might be reduced if combinations of drugs are used. This presupposes two conditions, 1) that the untoward effects depend on the size of the dose, and 2) that a smaller dose of each is required when more than one drug is used. Whereas the former is generally true, the latter can by no means be taken for granted, since, for the great majority of infections each drug must be given in its optimum dose. Actually the only situation in which a possible reduction in toxicity may be expected from the use of combinations is when they consist only of chemically related drugs having essentially the same activity but produce clearly different toxic effects. The only examples are streptomycin plus dihydrostreptomycin and the sulfonamide combinations. The two streptomycins differ in the incidence of vestibular and auditory damage they produce when used individually and their use in the same total dose of equal parts of both have been reported to reduce the incidence of both types of neurological damage, but this has not been the experience of all observers. With the combination of different sulfonamides, the antibacterial effect appears to be additive but each derivative retains its own individual solubility, permitting a reduction in the urinary tract complications due to precipitation of the less soluble drugs.

There are more cogent reasons for caution in the use of multiple antibiotics, especially when not tailored to the particular infection under treatment.

The expected broad coverage or synergistic effect may, in fact, not hold for the particular infection. Also, the widespread use of many antibiotics simultaneously, particularly in hospitals, results in increase in incidence and spread of organisms resistant to all of those antibiotics. Such organisms then establish themselves, particularly in seriously ill or debilitated patients and produce serious and even highly fatal infections in them.

If we now ask the second question:—Can any of the fixed combinations now available be recommended for general use, or even for use in any special situation? The answer must be clearly and emphatically in the negative. All of these combinations—whether penicillin plus either streptomycin, oleandomycin or novobiocin, or one of the tetracyclines plus either oleandomycin or novobiocin, or any of these with sulfonamides—have the same defects. In each instance they contain at least one agent to which a large number of staphylococci and other organisms are resistant and, when the organism under treatment is susceptible to one or both constituents, the effective one may not be available in adequate amounts or in the proportion required for optimum therapeutic effect or to provide protection against the development of resistance. I am not aware of any infection in which optimum treatment is provided by any of the combinations in the proportions that they are now available, nor do I know of any that might provide such optimum therapy. The risk of toxicity from their use is enhanced and when it occurs, elimination of the offender or adjustments in dosage cannot be made in the same manner as when the drugs are used individually.

Perhaps the greatest objection to the use of fixed combinations of antibiotics, and in fact, in prescribing any of the mixtures of drugs now being marketed by the various pharmaceutical firms, is that they have removed the physician from his important status as an educated and rational individual who acquires his own knowledge, experience and skill and applies them to the choice of therapy as required for his patient. Instead, these ready-made mixtures put the physician in a position of applying therapy by rote, or because he can more easily remember trade names which are often blasted into his ear by detail men or flashed before his eyes repeatedly in his daily mail or when and if he leafs through his medical journals, very much like the names and theme songs of the popular brands of beers or cigarettes to which he is unwillingly subjected whenever he listens to his radio or watches his television.

Chemoprophylaxis

The problems involved in the practical application of chemoprophylaxis of infections depend on the organisms causing those infections, some fac-

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tors in the host, the drugs used and the conditions under which they are given. Moreover, these problems have been subject to change with changes in the ecology and the frequency and pathogenicity of various common bacteria, their susceptibility to drugs and the opportunities to spread following their extensive use and with the introduction of new agents. A true picture of the value of drugs in prophylaxis can be obtained only by careful clinical observations of their use in specific situations. The reliability of the data and of the conclusions based on those data will depend on the details of those studies and on how well they are controlled, and even then they would be applicable primarily to similar conditions and would have to be modified when applied to other situations.

I have recently had occasion to review rather extensively the literature concerning the prophylactic uses of antimicrobial agents in various infectious diseases and attempted to learn which uses have been clearly demonstrated to be effective by carefully controlled studies and those in which they have been shown to produce no beneficial effect or have even proved harmful. There were of course many conditions in which the results reported were varied and even contradictory and some in which early favorable results could not be reproduced later, even by the same observers. This review, heavily documented, will soon become available¹⁷ for any who will wish to read it, so I shall present here only a brief summary of some of the more important findings and conclusions.

Perhaps the most thoroughly studied prophylactic use of antibacterial agents and the one found to be highly effective by nearly all workers in both civilian and military practice, is the prevention of streptococcal infections and of their principal serious nonsuppurative complications, rheumatic fever and acute glomerulonephritis, especially the former. Adequate treatment of the acute streptococcal infections will also prevent the suppurative complications. Some evidence has recently been presented that the occurrence of cardiac disease may be significantly reduced by six weeks of intensive penicillin treatment if begun early in the course of acute rheumatic fever, but this still requires confirmation. Penicillin is the prophylactic drug of choice, but erythromycin, tetracycline or sulfadiazine may be used in individuals who do not tolerate penicillin.

The administration of a single dose of 1.2 million units of benzathine penicillin to the entire personnel of any closed population, such as a military installation or an institution, will halt an epidemic of hemolytic streptococcal infections, clear nearly all streptococcal carriers, prevent implantation of the organisms in other individuals and prevent the occurrence of new cases. Oral doses of penicillin, or one of the alternative drugs mentioned when given

two or three times daily have produced similar but somewhat less striking effects. The prevention of recurrences of rheumatic fever requires continuous application of these agents, preferably benzathine penicillin given at intervals of four weeks, at least during the entire school age and during military service. Some authorities have advocated continuing this prophylaxis throughout life in all susceptible individuals, whereas others consider it necessary only as indicated above and for at least five years after an attack of rheumatic fever.

The fact that transient bacteremia occurs frequently during dental manipulations, particularly extractions, and during operations and instrumentation of the urinary tract has logically led to the recommendation that individuals with valvular heart diseases or congenital cardiac or vascular lesions undergoing such procedures receive prophylactic doses of antibiotics to prevent the development of bacterial endocarditis. Penicillin, in moderately large doses before and for one or two days after dental manipulations is generally recommended because it is active against the mouth organisms, usually streptococci of the viridans group, which are found in the blood under these conditions. Chloramphenicol has been recommended as the drug of choice for patients during or immediately after instrumentation or operations on the lower urogenital tract, but the routine use of this antibiotic has not proved effective in the only controlled study that has been reported. Strict asepsis and possibly treatment directed specifically against organisms that are found in cultures made at the time of instrumentation or operation would seem to be more logical, but there are no reported data on results of such usage. For that matter, there are no reports of controlled studies that prove conclusively that the administration of penicillin during dental manipulation has actually prevented subacute bacterial endocarditis and, in fact, a number of cases following such prophylaxis have been reported.

Penicillin, often together with streptomycin, has been used routinely by many surgeons during and after valvulotomy or open heart operations. The exact value of such treatment in the prevention of bacterial endocarditis is difficult to assess, but such infections have been recorded in a small proportion of cases; these became manifest at various intervals up to a few months after the operation. Most of them have been due to staphylococci, half of them *Staph. albus*. Stich abscesses of the myocardium or great vessels have developed in some cases and manifested themselves following the operation as persistent bacteremia which failed to respond to massive antibacterial therapy. When the sutures, usually silk, were removed, the bacteremia cleared. In dogs, catgut appears to be the only suture mate-

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BASIC REQUISITES FOR AN ADEQUATE COMPENSATION SYSTEM*

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THE MOST VITAL NEED of an individual, who has been disabled as a result of an occupational accident, is physical restoration and return to gainful employment at his highest attainable skill in the shortest period of time. This requires the provision of adequate medical care, of physical and vocational rehabilitation services when needed and above all an opportunity to return to gainful employment upon recovery. All will agree that this is not an unreasonable demand, but our society works otherwise, and as a result thousands of injured workers, who could be returned to gainful employment, must suffer prolonged periods of disability, many of whom remain disabled, or are denied employment when capable of return to work. In the solution of this problem, medicine, labor, management, the insurance carrier, the legal profession and government all share in the responsibility. Time does not permit an exhaustive discussion of the roles each play either in the promotion or obstruction of the rehabilitation of the injured worker. I shall, therefore, discuss only the high points relative to the provision of medical care and the influence of the Workmen's Compensation System.

Medicine as now practiced in these United States has no equal throughout the world. The surgical handling of acute trauma has reached a plane never before attained. This is due, in part, to the stress laid upon the importance of adequate first aid, the transportation of the injured, and the standardization of hospitals. It is due, in large measure, to the tremendous strides made in the surgical handling of various traumatic lesions aided immeasurably by the discovery of the antibiotic drugs. The more recent developments in the treatment of open wounds, and in the field of plastic, hand and fracture surgery suffice to indicate the progress made

in other fields. Unfortunately, rehabilitation of the patient does not end with the healing of surgical wounds. Much more must be done; far more than is now appreciated by the medical profession in general. The one major criticism which may be leveled at modern medicine is its failure to recognize the importance of adequate surgical and medical aftercare. This is due to a defect in our basic training. Teaching in medical school, internship or residency, or in postgraduate courses as offered by medical schools, hospital staffs, or medical societies stresses the importance of accurate diagnosis and technique in the management of the acute lesion. Rarely is instruction given in the treatment of the individual once the emergency is passed. As a result, we have adopted the concept that once a wound is healed or a broken bone mended, our job is done and it is up to the patient to rehabilitate himself the best he can. Nothing could be further from the truth, for injury is apt to set off a chain reaction. Numerous complications may develop, all of which are as important to the end result as is the treatment of the acute emergency. Our responsibilities to our patients are perhaps best stated in the *Principles for Rehabilitation of the Injured Worker* as adopted by the American College of Surgeons in 1952. "The medical profession should adopt the concept that the responsibilities of the treating physician extend over the entire period of disability to the end that the patient is restored to gainful employment at his highest attainable skill. Rehabilitation and restoration of the injured worker must begin with first aid and continue through the period of disability. In order that a physician may carry out this responsibility it is essential for him to recognize the total medical problem of the patient, in addition to his injury, as well as his personal problems. The physician must bring to bear on these problems all the skills and disciplines that science and society can offer and utilize all community resources which can assist him in the accomplishment of these objectives." These principles not only set forth the responsibility of the physician to his patient, but present to him a mandate to take an active part in the solution of those problems created by our society which perpetuate disability and prohibit re-employment.

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*Presented at the 149th Annual Meeting of the Rhode Island Medical Society, at Providence, Rhode Island, May 11, 1960.

In the case of injury, upon what does eventual recovery depend? It depends upon the extent and severity of the injury, the efficacy of first aid rendered at the site of accident, and the method of handling during transportation to the site of definitive care. These are factors over which we have no control.

Handling of the Acute Emergency

The most important factor in the control of disability and eventual restoration is the competence of handling of the acute emergency. An accurate appraisal of the extent of injury must be made, followed by competent surgical handling of damaged tissues. If an accurate diagnosis has not been made, or if surgical reconstruction has been inadequate, then function never will return to the injured part. Secondary procedures then become necessary, the end results of which are often jeopardized by scar tissue, muscle atrophy and paralysis, and joint stiffness. In the handling of the acute emergency, competence and time are, therefore, of the utmost importance. Most physicians recognize the limitations of their own ability and do not hesitate to call on those more competent. Other serious injuries may occur, however, which do not require hospitalization but which may, nevertheless, result in prolonged disability if medical care is inadequate. The choice of physician is thus of prime importance. The average citizen has no way of determining the competency of his physician, and his choice often leaves much to be desired. On the other hand, some employers and insurance carriers when required by law to provide medical care are prone to overlook the importance of medical competency and too frequently choose a physician for his forensic potential rather than his medical ability. They have not yet learned that the best medical care is ultimately the least expensive.

What may be said for the general efficiency of the medical profession in the handling of the acute emergency can not be said for subsequent treatment once the emergency has passed. Physicians in general and surgeons in particular are apt to forget the importance of adequate aftercare and the effect it has upon the eventual end result. The value of the minimum amount of splinting with early active use of all uninvolved muscles and joints is not generally appreciated. The importance of early exercise, not only for the injured part, but for the body as a whole, is apt to be overlooked. Too many simple injuries of the hand and wrist, which have received adequate emergency care, end disastrously because of swollen, stiff hands or frozen shoulders due to failure of the physician to insist that his patient perform early active exercises with these uninvolved joints. Too many patients, confined to bed for weeks, are unnecessarily retarded in their

ambulation because their general body tone has been allowed to deteriorate due to lack of exercise, which could have been given during the period enforced recumbency. All patients, particularly those who are ambulatory and under domiciliary care, must be placed on those exercises which will restore function to a maximum degree in the shortest possible time. These exercises should include those obtained through work therapy. The patient must be given specific instructions as to how, when, and why these exercises should be done. This means scrupulous attention to detail on the part of the physician. Unfortunately, many physicians feel they have no time for such detailed supervision. This, however, is just as important an aspect of adequate care as the treatment of the acute emergency, and is a task we must not shirk.

In many instances, physical facilities may not be available either in the doctor's office or in the patient's home, or the patient may be the type who will do nothing for himself unless constantly supervised. In such cases the patient should be sent, if possible, to a special center where such facilities and supervision can be given. There is a great demand on the part of many lay groups for the establishment of special rehabilitation centers throughout the country. The need for such facilities, particularly for the seriously injured, can not be denied. The real need, however, is for the doctor to realize that once he has undertaken the care of a patient his obligations to that patient do not cease until he has been restored to as near normal as is humanly possible. To that end the doctor must learn how to administer the most efficient type of aftercare or to utilize the services of those individuals or institutions capable of so doing.

Recognition of Medical Complications

A factor which may play a profound part in the restoration of the disabled is the recognition of medical complications. Diabetes, nephritis, anemia and vascular lesions, to name a few, may become active following trauma and may do much to retard convalescence. Since surgeons may overlook such medical complications, any surgical case which fails to make satisfactory progress should be examined by a competent physician.

Other factors which all too frequently play a decisive role in rehabilitation are its psychological complications. In some instances psychoneurosis or mental depression may develop to such a degree as to require the aid of a psychiatrist. In most cases, depression is brought on by a feeling of insecurity due to the loss of income or inability to meet current expenses, to keep a child in school or to meet mortgage payments. This may not seem to be a concern of the doctor, but it is nevertheless a complication of trauma and a few moments of frank

discussion may do much to relieve the patient of his anxiety. Often depression may be due to fear of loss of employment, either through the loss of a job, or inability to return to regular work. If the physician is aware of this fear, a telephone call to the employer will often result in a promise of some type of work. In cases in which an individual can not return to his regular work, and in which jobs are frozen by union seniority rights, discussion with management and union representatives may be productive of a promise of work within the patient's capacity.

It may seem to many that this type of social service is not a duty required of the attending physician. However, the psychological effects of trauma are as real and are as important to the patient and his recovery as any surgical complication, and their alleviation is our responsibility.

Frequently an injury is of such severity as to preclude return to regular work. This is often obvious to the surgeon within a short time of the accident. When such an appraisal is made, the patient and his family should be so informed as soon as it is prudent to do so. Efforts should then be made to contact an agency interested in vocational training. The sooner such training is started, the sooner the patient will return to work at his highest attainable skill. It is not fair to the individual to allow him to entertain the hope that he can eventually return to his regular work when he obviously can not do so. In 1951, 4,430 persons, injured on the job while under Workmen's Compensation, were returned to work under the federal-state program of vocational rehabilitation. The average time lag between injury and referral to the vocational training agency, however, was seven years. The economic loss to the patient and to the community in these cases was tremendous. There were undoubtedly, many factors which operated to produce such prolonged disability, but in some of the cases, restoration could conceivably have been expedited by more careful medical supervision.

There is little question that if the medical profession will adopt the concept of its responsibilities to the patient as outlined by the American College of Surgeons much can be done to hasten the recovery of our patients.

It is obvious, however, that the medical aspects of the restoration of the injured worker represent but one facet in a most complicated problem. Our society has erected even more formidable road blocks. The hiring and firing tactics engaged by some employers following an occupational accident demands solution, as does the prohibition of employment created by labor's seniority rights when an injured worker is unable to return to his regular employment.

The Workmen's Compensation Systems

Perhaps the most effective roadblock of all is created by our Workmen's Compensation systems. This has been the subject of study for the past ten years, of the American College of Surgeons through its Committee on Trauma's Subcommittee on Industrial Relations of which I have been chairman. This committee, in co-operation with labor at a national level, some insurance carriers, and the United States departments of Labor, Public Health, and the office of Vocational Rehabilitation, has undertaken a study of this subject and has evolved a set of principles for a modern workmen's compensation system, adopted by the College in 1954, and the Basic Requisites for an Adequate Compensation System, adopted by the College in February, 1960.

When the compensation acts were formulated some forty-five years ago, medical science had not progressed to a point where it could cope with the most serious injuries. Such injuries did, indeed, lead to much permanent and total disability. With this fact in mind, the compensation laws were established to provide the injured worker with some financial assistance during the period of disability and for monetary recompense for loss of earning power due to permanent disability. The acts were thus developed to provide the worker with a means of livelihood when medical science was unable to restore him to work capacity in the open labor market.

Since then medicine and its ancillary services have developed to such a degree that no injury, regardless of severity, can be said to be truly totally and permanently disabling, provided the best of medical care is given and the individual has the desire and fortitude to rehabilitate himself. In this day of social change, we might naturally expect those agencies which deal with occupational disability to be interested in the control of that disability and the ability of the injured worker to return to gainful employment. This however is not the case. The average industrial accident commission has not taken cognizance of the progress of modern medicine. It is not concerned with the adequacy of medical care which the injured receives or whether work capacity could be improved by further care in more competent hands or by physical or vocational rehabilitation. Established as quasi-judicial bodies, they have continued to remain so and continue to attempt to dispose of the basic needs of the injured worker on a purely legal basis through a complicated system of monetary awards. By placing a premium upon disability, we encourage injured workers to remain out of work, for the longer the disability the greater the award. Not only has this system encouraged disability, it has promoted vast numbers of spurious claims which flood

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the dockets of the compensation agencies with resultant long drawn out legal controversy and prolonged delays in adjudication. The system has encouraged some physicians to overtreat the patient and it has proved a lucrative field for the compensation claims attorney. This is a disastrous situation for the worker who is truly disabled and whose work potential has been impaired. Oftentimes he is not aware that more competent medical care or rehabilitation procedures could reduce his disability; and even if such services were offered, he would, on advice of counsel or his physician, reject them until an award had been reached. By this time his disability has often become fixed beyond all hope of recovery. When adjudication has been reached the commissioner disposes of the case, the physician and the attorney receive their fees, the insurance carrier is absolved from further liability and the worker receives a sum of money which he spends and a disability which he keeps. Disabled, he is unable to find a job, his financial award is soon expended, and he and his family find themselves upon the rolls of public welfare. No one will deny the injured worker's right to financial recompense for injuries received or for loss of earning capacity but, while awaiting adjudication, medical care and rehabilitation should be continuing without interference and above all no financial award should be made until maximal recovery has been obtained.

It is axiomatic that litigation is incompatible with rehabilitation. In any reorganization of our workmen's compensation system, if we are sincerely interested in the restoration of injured workers to gainful employment, then the highly legalistic systems must be abolished.

Basic Concepts

It is our belief that rehabilitation of the injured worker and his return to gainful employment is, or should be, the basic concept of a modern workmen's compensation system. To this end we believe changes in the attitude, laws, and administration of this system are essential.

To insure the procurement of competent and continuous medical care and adequate medical and vocational rehabilitation services, it is obvious that there must be some supervision of medical care. This, we feel, is the responsibility of the compensation agency. This does not mean that the control of medical care should be placed in lay hands but rather in the hands of an adequate and competent medical department headed by a medical director, and under the supervision of a medical advisory committee. This committee should be appointed by the governor from names of physicians submitted by the state medical society, the dean or deans of medical schools, and from medical specialty groups within the state. The state commissioner of public

health should be an ex officio member of the committee. The functions of the Medical Advisory Committee would be to advise the workmen's compensation agency with respect to all policies affecting medical care and rehabilitation.

In order to supervise the medical care the agency must have knowledge of all industrial accidents, therefore, all cases of bodily injury due to accident or disease resulting in loss of time beyond the day or shift or in permanent impairment without loss of time shall be reported promptly by both the employer and attending physician to the state compensation agency.

It is recommended, where adequate statutory provisions do not now exist, that laws or regulations be enacted requiring prompt reports of injury to the compensation agency. In those jurisdictions where statutes or regulations exist but are not enforced, it is recommended that such measures be activated by the compensation agency.

Many state compensation agencies have no medical department. Some agencies have medical directors but their work is confined purely to medico-legal affairs. Few state agencies are concerned with the adequacy and continuity of medical care or rehabilitation. If the agency is to supervise the medical care as outlined in the *Operating Principles* then each agency must have competent medical assistance.

Functions of Medical Director

It is essential that each administrative agency of workmen's compensation shall have a medical director supported by appropriate staff. The functions of the medical director shall be:

- (1) To review all reports of injury as submitted by the employer and attending physician;
- (2) To determine those types of cases which are to be called to his immediate attention. In such cases to take steps:
 - (a) To determine the accuracy of the diagnosis;
 - (b) To assure that the injured worker is under competent medical care;
 - (c) After discussion with the attending physician, to consider whether there is need for consultation services.
- (3) To see that competent and continuous medical care is provided as long as medically indicated.
 - (a) Progress reports should be submitted periodically by the attending physician. These shall be reviewed by the Medical Director.
 - (b) In cases where the medical director believes that medical care may not be competent or when in his opinion recovery has not been satisfactory or has been unduly

delayed, he should have the right to an examination not only of the patient but also of all physician's and hospital records including laboratory findings and X-ray films. Such examinations may be made by the director himself or at his discretion by panels of impartial medically qualified experts or their designees as will be described. (c) In cases where incompetent or inadequate medical care is corroborated by the panel, the medical director may then transfer the patient to a qualified expert designated by the panel for further treatment.

- (4) To establish standards for the provision of medical and vocational rehabilitation and to see that such services are provided when and as long as indicated.
- (5) To examine all injured workers before any final financial determination of permanent disability is made by the agency to make sure maximum recovery has been obtained.

The state compensation laws should be amended, where necessary, to provide the compensation agency with the authority to supervise the provision of medical care in accordance with the above recommendations.

To assist the medical director in the performance of these duties, panels of impartial medically qualified experts should be established within the workmen's compensation system. These panels should be appointed by the director of the workmen's compensation agency upon the advice of the medical director and the Medical Advisory Committee. The functions of the panels shall be:

- (1) To assist the medical director in the examination of patients in cases involving questions of the competency or adequacy of medical care.
- (2) To recommend to the director, when indicated, sources of competent medical care.
- (3) To assist the medical director as consultants in specific cases by giving an opinion as to:
 - (a) The need of consultation services;
 - (b) The need of medical and vocational rehabilitation services;
 - (c) The existence or extent of disability, and
 - (d) The causal relationship of injury or disease.Certainly such cases would be more equitably and expeditiously handled by such experts than by legal argument.

Changes in Administrative Rules Necessary

Attainment of the basic principles can be accomplished only by changes in the administrative rules and procedure and/or in the compensation laws themselves.

Provision must be made for:

- A. Complete and continuous medical care from the date of injury or disability whether due to accident or occupational disease to maximal restoration without statutory limitation of cost or duration.
- B. Complete medical rehabilitation including referral to vocational rehabilitation services and adequate financial support for such services, until maximal restoration is achieved.
- C. Adequate compensation to insure family security during the entire period of disability and rehabilitation.
- D. Coverage of all employees regardless of nature of employment including those in small establishments and those engaged in occupations now considered as non-hazardous. This would include farmers.

Under our present compensation laws the cost of an industrial accident is placed upon the last employer. Employers, thus, on advice of their insurance carriers, are often extremely loath to hire individuals with a history of a serious industrial accident. Employers and insurance carriers can hardly be blamed for this attitude, but when such individuals are precluded employment, they are forced upon the roles of public welfare, and society must then assume the burden, to say nothing of the social and economic effects upon the individual. Some rectification of this situation could be obtained by broadening the second injury fund provisions, thus encouraging industry to employ handicapped workers.

To insure the maximal efficiency in administration the laws should require the employment only of experienced individuals as commissioners and medical directors. These positions should be career appointments at adequate salaries and not subject to changes in administration.

We believe the adoption of these requisites into the compensation system by legislation will bring about the drastic changes needed in the restoration of injured workers to gainful employment. Serious injury will be detected at an early date and competent medical care promptly provided. Medical care and physical rehabilitation services will be continuous and far more individuals would thus be restored to gainful employment. With early referral for vocational training, far more individuals will be able to find employment within their capabilities, especially if the employer is given adequate protection in the event of re-injury. The use of medical panels will eliminate most spurious claims for few attorneys will pursue such claims should the panel find the claimant capable of return to work. The practice of perpetuating a disability for the sole purpose of increasing the award and the interference with medical care will also disappear

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THE CHALLENGE PRESENTED BY THE FOREIGN GRADUATE*

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OVER 3,300 GRADUATES of foreign medical schools come over here each year to work as interns or residents in our hospitals. More than 2,300 are currently serving as interns, more than 6,000 as residents.

When we are asked why so many foreign medical graduates have come to the United States (3,000 from the Far East; 1,700 from Latin America; 1,500 from Europe and 1,300 from the Near and Middle East) it would be nice if we could say "Because they have found out that it is in the United States that they can get the best graduate medical training." This is to some extent true, but unfortunately a much more complete answer to that question would have to add "because 1,400 of our 8,000 hospitals are bidding high for their services both with increased stipends and attractive quarters, because the Information and Educational Exchange Act of 1943 has made it comparatively easy to obtain an exchange visitor visa for training in an approved hospital of the United States for from one to five years, because the State Boards of Medical Examiners of most of our states have been very lenient in permitting physicians with foreign degrees to occupy internships and residencies in United States hospitals without taking licensing examinations, because no scheme has ever been concocted that made it so easy to travel, learn and see the United States and all on an earn-while-you-learn basis, providing maintenance and a stipend instead of charging tuition."

How successful is this mass acceptance of foreign medical graduates in our hospitals proving to be? It is apparently working out reasonably well, but the complaints from both hospitals and foreign trained doctors are common enough to make it plain that a great deal more must be done than has been done in the immediate past, if we are going to make this a really successful venture in

educational exchange in medicine. Hospitals have complained: that many foreign medical graduates who claimed a satisfactory command of English were unable to elicit a satisfactory medical history from an English-speaking patient; that a great deal of the knowledge of many candidates was book-or-lecture-room knowledge and was too little accompanied by practical knowledge and skill in the use of aseptic technique or in the performance of spinal taps, blood counts or venipuncture; that some of the so-called medical graduates were eventually found to be, pharmacists, dentists or graduates of native practitioner or "herb-doctor" schools; that nationals of some countries showed shocking disrespect, according to United States Standards, for the modesty of patients in doing physical examinations. Many foreign medical graduates have complained bitterly of the large amount of "donkey work" they were called upon to do, and after a year or two of work in a United States hospital, they have returned home quite unhappy with the actual instruction they have received. Many countries short of physicians have been deeply concerned about the numbers of their physicians who have gone to the United States as students and remained there almost indefinitely.

How is the E.C.F.M.G. Helping to Minimize These Difficulties?

Organized and sponsored by the American Hospital Association, the American Medical Association, the Association of American Medical Colleges and the Federation of State Medical Boards of the United States, the Educational Council for Foreign Medical Graduates came into operation October 1, 1957. Its two chief purposes are to (1) serve as a source of authentic information for foreign medical graduates contemplating graduate medical education in United States hospitals; (2) to make it possible for any foreign medical graduate, while still in his home country, to establish his qualifications to assume a position as intern or resident in a United States hospital with an approved teaching program.

The dissemination of information has been through printed materials and the answering of thousands of inquiries. The establishment of qualification has been through (1) the evaluation of

*Presented at the 149th Annual Meeting of the Rhode Island Medical Society, at Providence, Rhode Island, May 11, 1960.

credentials (18 years of formal education including graduation and at least four years of credited work in a recognized school of medicine) (2) the passing of the E.C.F.M.G. English test; (3) the passing (or obtaining of a score of 70-74% in the American Medical Qualification Examination. (The examination is given spring and fall of each year, in over 65 examination centers abroad, 35 in the United States.)

The accomplishment to date has been as follows:

- (1) 298 candidates took the examination in March 1958; 844 took it in September, 1958; 1,772 took it in February 1959, 3,068 took it in September 1959 and 6,029 took it March 16, 1960.
- (2) Of the 12,011 who have so far taken the examination, approximately 40% have scored 75% or better and received standard certificates, approximately 23% have scored 70-74% and received Temporary (2-year) Certificates. Approximately 37% of the candidates have failed to attain a score of at least 70%. Approximately 1.5% have failed both the American Medical Qualification Examination and the E.C.F.M.G. English Test.

In its first two and one-half years, then, the E.C.F.M.G. has made it possible for approximately 7,500 foreign medical graduates to establish their qualification to assume intern or residency duty in United States hospitals with approved teaching programs.

Problems That Lie Ahead in 1961

In the planning stages of the E.C.F.M.G. 1955-56 and 1957 some doubt was expressed that it would be possible to give 360 question multiple choice examinations in medicine in English all on one day in centers all over the world to graduates of 533 foreign medical schools and have it come out with reasonably comparable results. Our experience with our first five examinations has proved that with two minor adjustments this can and is being done. The two minor adjustments are, (1) to exclude from participation in the examination, graduates of native-practitioner schools of medicine, unapproved in their own country and unrecognized by the World Health Organization and (2) to grant a two-year temporary certificate to those scoring 70-74% in the examination.

There still remains a serious problem, however. Our American Medical Qualification Examination is a comprehensive clinical examination (35% of the questions from medicine including psychiatry, 25% from surgery, 15% from pediatrics, 15% from obstetrics and gynecology, 10% from the basic sciences). How can hard-working residents

entirely engrossed in their specialty, whether it be psychiatry, radiology, anesthesiology or preventive medicine, find the time to refresh their memory of medicine, surgery, pediatrics, obstetrics and gynecology in order to pass our examination? ([1] Need time to study and [2] review courses.)

If you will note the dropping off in the percentage of candidates qualifying in the United States it becomes immediately apparent that in our first four examinations we have skimmed the cream of our foreign medical graduates in the United States. The percentage qualifying in the United States dropped in the March 1960 examination to 56.4%. It is likely to drop even lower in September, 1960!

We have been dangerously negligent since World War II in assessing the qualifications of foreign medical graduates before admitting them to our intern, residency, and staff physician positions. Everyone is agreed that a general tightening up in this area is badly needed.

Our four sponsoring agencies, about two years ago, set July 1, 1960 as the deadline foreign medical graduates in our hospitals must fall in one of four categories: (1) E.C.F.M.G. certified; (2) permanently licensed; (3) in last six months of appointment before returning home, and (4) on a six months contingent appointment beginning July 1, 1960 with the provision he be registered to take the examination September 21, 1960.

We can foresee:

1. That on December 31, 1960, there will be a residue of about 2,000 foreign medical graduates who will be returning home having been unable to qualify (out of 8,400);
2. That in 1961 only about 1,650 of the 3,300 foreign medical graduates who would like to come over will prove qualified;
3. That 1961 will therefore be a year of definite shortage of foreign medical graduates;
4. That 1962 will be a year of slight shortage;
5. That 1963 will see more foreign medical graduates—and all will be qualified.

What Additional Help Is Needed?

Much more extensive remedies will eventually have to be brought to bear on the problem. Included in these remedies will be:

- (1) Reducing the abnormal demand for foreign-trained physicians to serve as interns and residents in our United States hospitals by increasing the output of medical graduates from our United States medical schools. (This involves the construction of a number of new medical schools and will require time.)
- (2) Safeguarding foreign medical graduates from exploitation by dropping from the

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approved list, internships and residencies that are almost entirely service-oriented rather than teaching oriented. (This is a definite responsibility of the Council on Medical Education and Hospitals of the American Medical Association.)

- (3) Increasing the number and scope of responsibilities of directors of medical education in hospitals.
- (4) Developing orientation programs in all hospitals with foreign-trained interns and residents which will function effectively in adapting these trainees to the duties they are expected to perform.
- (5) Developing refresher courses in the basic medical sciences for foreign medical graduates in our graduate schools of medicine and in the postgraduate work offered by our undergraduate schools of medicine.

SUMMARY

1. Internship and residency training in United States hospitals involves the student in a great deal of service to patients along with his participation in the educational program of the hospital.

2. The foreign medical graduate as intern or resident will do well to keep in mind that he is receiving a stipend and frequently maintenance, that he is not paying any tuition, that the primary function in the majority of hospitals must continue

to be service to the patient, with education of the intern or resident subsidiary to that primary function.

3. The E.C.F.M.G. should not be expected to do more than to make information about United States internships and residencies available upon request and to make it possible for the foreign medical graduate while still in his own country, to establish his qualifications in respect to command of English, and knowledge of medicine.

4. Hospitals enrolling foreign medical graduates in their internships and residency programs should develop orientation programs designed to adapt the foreign medical graduate to the duties he will be expected to perform.

5. Medical education authorities, both undergraduate and graduate should be requested to apply their educational know-how to the problem of providing effective refresher courses for foreign medical graduates.

General Conclusions

1. There is general agreement that one of the most effective means of preventing war is to develop mutual respect and understanding between nations by the exchange of students.

2. Under a very unusual set of circumstances the United States hospitals are now in position to provide graduate training to large numbers of properly qualified foreign medical graduates.

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES SUMMARY OF EXAMINATION RESULTS

Examination	Granted Standard Certificate			Granted Temporary Certificate		Total 70 or above	
	N	N	%	N	%	N	%
March 25, 1958	298	152	51	51	17	203	68
September 23, 1958							
United States	707	371	52.4	193	27.3	564	79.8
Abroad	137	47	34.3	33	24.1	80	58.4
Total	844	418	49.5	226	26.8	644	76.3
February 17, 1959							
United States	1278	616	48.2	341	26.7	957	74.9
Abroad	494	153	31.0	110	22.3	263	53.2
Total	1772	769	43.4	451	25.5	1220	68.8
September 22, 1959							
United States	2351	1088	46.3	601	25.6	1689	71.8
Abroad	717	282	39.3	141	19.7	423	59.0
Total	3068	1370	44.7	742	24.2	2112	68.8
March 16, 1960							
United States	4909	1650	33.6	1118	22.8	2768	56.4
*Abroad	1120	346	31.9	231	20.6	577	51.5
Total	6029	1996	33.1	1349	22.4	3345	55.5

*Pakistan not included
N 25

3. This situation offers a remarkable opportunity for the United States to contribute to world medicine and world peace.

4. With these ultimate values in view, it would seem essential that all the persons and agencies involved should co-operate in taking the necessary steps to clear up the minor problems and difficulties now existing and to make this important part of the international exchange in medicine a real success.

BASIC REQUISITES FOR AN ADEQUATE COMPENSATION SYSTEM

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once a definite course of therapy has been determined either by the medical director or by the impartial medical panels. Not only will the cost of medical care be reduced but the elimination of litigation should reduce materially both the cost of compensation insurance and that of workmen's compensation administration. More money would thus be available for the care of those truly disabled.

It is not to be anticipated that these changes will be afforded any wild acclaim for the present system has proved far too lucrative to too many diversified interests. On the contrary, vicious opposition to their adoption is to be anticipated. The needs of the injured worker must however be met. A change in the concept of the function of and the laws and administration of the workmen's compensation system is long overdue. We believe that the adoption of the basic requisites, as described, will go a long way toward the solution of the problems of the occupationally disabled.

ANTIBACTERIAL AGENTS: USES AND ABUSES IN TREATMENT AND PROPHYLAXIS

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rial which does not produce such abscesses but surgeons have been loath to use it in such cases.

In general, continuous prophylaxis in any individual case is most likely to be effective and involve the minimum risk of secondary infection with other resistant organisms if it is directed against specific and sensitive organisms and taken on an ambulatory basis away from the hospital environment. Mass prophylaxis has the greatest chance of success if the organism or infection is highly susceptible to the antibacterial agent or agents used, if these are applied over a relatively brief period, and all individuals in the involved area are treated simultaneously. The success of continuous prophylaxis in institutions and hospitals may be limited by the emergence or introduction and spread of resistant organisms that are pathogenic and invasive. This was demonstrated dramatically in the

military services during World War II after a program of mass prophylaxis of streptococcal infections with sulfadiazine had been in operation for several months. The increasing proportion of staphylococci and of many coliform organisms that are resistant to many of the most commonly used antibiotics that are now found in hospitals may also be the result of the widespread use of antibiotics, especially for prophylaxis. It has also been the cause, in turn, of the decreasing effectiveness of the available antibacterial agents and of the increased morbidity and mortality from such resistant infections in our hospital¹⁸ and probably in most other large hospitals.

There is good evidence that sulfadiazine, in relatively small doses, will protect exposed individuals against meningococcal infections and eradicate the carrier state; if given simultaneously to all persons in a closed community during an epidemic of meningococcal infection, it will halt the epidemic promptly. Single oral doses of penicillin have proved effective in preventing gonorrhea if given within a few hours of exposure. Continuous prophylaxis of prostitutes with monthly doses of benzathine penicillin as used in France and in some other countries, probably renders and maintains them noninfectious and free of both syphilis and gonorrhea. Penicillin ointment applied at birth will prevent ophthalmia neonatorum and if given in a full therapeutic dose to an infected mother before delivery, will prevent congenital syphilis in the offspring. Mass treatment with large doses of benzathine penicillin administered simultaneously to all infected and exposed individuals of large infected populations and repeated at proper intervals, give promise of essentially eradicating certain other treponematoses, such as endemic syphilis, yaws, bejel and pinta that are widely prevalent in many areas of the world.

Sulfadiazine or the tetracyclines have been effective in controlling outbreaks of dysentery, but increasing numbers of strains of *Shigella* are now proving to be resistant to one or both of these agents. Localized outbreaks of *E. coli* diarrhea in nurseries or institutions can be controlled by simultaneous oral administration of neomycin plus polymyxin (or related antibiotics) to all infants and small children in the nursery. Oral neomycin, or the related kanamycin or paromomycin (Humatin) is also effective in alleviating or preventing hepatic coma or the other neurological symptoms of liver failure and may permit administration of proteins and chlorthiazide to such patients without inducing relapse.

Chemoprophylaxis has generally failed to prevent or minimize the symptoms and bacterial complications of the common cold or other minor acute viral respiratory infections. In hospitals they have

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also failed to prevent serious pneumonias complicating acute cardiac failure, and in patients with coma from many causes, or after tracheotomy for respiratory paralysis. They are also completely ineffective in preventing urinary tract infections in patients with indwelling catheters. These failures are generally associated with elimination of the common susceptible pathogens, notably pneumococci and hemolytic streptococci, or *E. coli* in the case of urinary infections, and the establishment of a flora resistant to the prophylactic drugs that are used. Infections have occurred just as frequently and sometimes even more often in prophylactically treated patients than in comparable untreated controls; however, whereas they may usually be treated successfully in the latter, they are more difficult to treat in the former.

Several trials carried out in Britain and some in this country in patients with chronic nontuberculous bronchopulmonary infections, including bronchitis, bronchiectasis and mucoviscidosis, have shown that continuous administration of a tetracycline antibiotic can reduce the number of acute exacerbations of febrile pulmonary infections and the disability resulting from them, particularly during the winter months and after simple colds. There is also evidence from trials in this country and in France indicating that the serious and frequently fatal complications of primary tuberculosis in children under three years old can be prevented by continuous administration of isoniazid to those known to have recently developed a positive tuberculin test. Such treatment may also provide protection to tuberculin negative individuals exposed for brief periods to heavily infected and contagious tuberculous patients.

It may be possible to halt epidemics of staphylococcal infections in nurseries by the simultaneous application of ointments or suitable creams containing neomycin and bacitracin to the anterior nares while applying antiseptic powders or solutions to the trunk of all newborn infants and all other children in the nursery and for skin care in all personnel. However, this is likely to have a lasting effect only if applied for a brief period and combined with permanent improvements in nursing techniques and environmental sanitation and the exclusion of infected carriers among the personnel. The antibiotics should be discontinued soon after the epidemic subsides in order to minimize the chances for establishing resistant strains.

On the other hand, the routine use of antimicrobial drugs in premature infants has failed to reduce the mortality or to prevent the implantation of drug-resistant virulent organisms prevalent in the environment or of infections with such organisms, but has been accompanied by serious complications. The use of sulfisoxazole (Gantrisin) with die-

thanolamine for prophylaxis has resulted in a high fatality rate associated with kernicterus; and chloramphenicol in doses of 100 mg. or more per Kg. per day has produced the so-called "gray syndrome" which also was highly fatal but could be avoided if the daily dose was reduced to 50 mg. or less per Kg. of body weight.

The possible value of chemoprophylaxis of rickettsial infections with chloramphenicol or one of the tetracyclines was demonstrated in scrub typhus; if the drug is given before symptoms appear it must be administered in repeated courses at properly spaced intervals. This should prove effective following natural or accidental inoculation of any of the rickettsias. By intensive treatment of all young parakeets in an aviary with chlortetracycline and repeating such treatment at intervals, it is also now possible to rid the aviary of psittacosis and thus prevent infection of those who handle or purchase these birds.

The use of antibiotics to prevent infections in individuals exposed to heavy radiation or in patients receiving continuous treatment with corticosteroids has not proved effective. Early clinical and bacteriological diagnosis and prompt, intensive and specifically directed therapy are preferable.

Nearly all competent surgeons now agree that the routine use of prophylaxis in clean operations is unnecessary and undesirable. Increasing numbers of carefully controlled studies have revealed more and more surgical situations in which the possible advantages, if any, of routine prophylaxis are more than balanced by their disadvantages. Decreasing reliance is being placed on antibacterials, and increasing emphasis placed on skillful surgery and strict asepsis, with adequate control of the environment.

Antibiotics in general are likely to be applied more successfully when specifically directed against infections with organisms against which they are known to be effective. In surgery, their optimum use is as an adjunct to surgical evacuation of suppurative foci and in the prevention of extension or invasion from an active inflammatory lesion. When antibiotics are used for the prevention of infections that may develop in contaminated wounds or during operations through a contaminated field, it is advisable to obtain suitable cultures of the area before treatment is started and to repeat these cultures during the course of treatment, which can then be changed, if indicated. However, mere growth of organisms, especially in small numbers and without evidence that they are producing infection should not in itself be taken as an indication for instituting or changing therapy. Most surgeons have used antibacterial agents,—usually neomycin together with a nonabsorbable sulfonamide or with bacitracin or nystatin—in the prep-

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THE MISUSE OF ANTIBIOTICS

IN THE Charles Value Chapin Oration delivered at the annual meeting of the Rhode Island Medical Society on May 10, Doctor Maxwell Finland presented advice to the profession that is authoritative and very much needed. In these days when very powerful and effective medications are being placed in the hands of physicians who are understandably bewildered by the multiplicity of trade names, combinations, and modifications, each with its maker's glowing claims of superiority, guidance by one who is a real authority on the subject is of the greatest value. His carefully worded and conservative statements based on years of laboratory and clinical investigation will certainly help us, as he says, to "differentiate between what are hopes and what are facts, between expectations and demonstrated results, between what those with vested interests want us to believe and what has actually been shown to be true."

From Doctor Finland's detailed discussion, which should be read and reread by every practicing physician in the state, the following major lessons can be drawn. When antibiotics are used in combination, such combinations should be employed with a knowledge of the bacterial infections being treated and they should be combined with careful consideration of their relation to each other and their tendency to decrease or increase the likelihood of the emergence of resistant strains of the organisms against which they are directed. A contribution which covers many of the organisms considered to be "normal flora" of an area of the body will at times allow naturally resistant organisms such as *B. Proteus* and others to "become pathogenic and invasive."

Certain combinations have been proved to be effective, as in brucellosis, tuberculosis, and enterococcus infections. "Fixed combinations," such as now flood the market, cannot be recommended as they are not tailored to the needs of the particular patient and usually contain "at least one agent to which a large number of staphylococci and other organisms are resistant."

The value of chemoprophylaxis, the use of anti-

biotics or sulphonamides to prevent the development of various infections and their sequelae, has been established in certain situations, is of questionable value in others, and of no value whatever in still others (in which unfortunately, we may add, its use appears too common). In the prevention of streptococcal infection and resulting rheumatic fever the use of penicillin or other appropriate agents is well established. In a number of other conditions the risk of the emergence of resistant organisms, especially where group prophylaxis in institutions is attempted, must always be kept in mind.

Doctor Finland reviews a number of situations in which attempts at chemoprophylaxis appear to be justified. On the other hand, among the conditions under which the use of these drugs is of no value in the matter of the prevention of bacterial infection he mentions the common cold or other minor viral respiratory disease. This, we may add, calls to mind the fact that the public, hampered by the danger inherent in the possession of a little knowledge, is very prone when attacked by these omnipresent maladies to demand of the doctor that "shot of penicillin" which it fatuously believes will cure whatever is the matter. Such demands must be resisted.

Among other situations in which prophylaxis by chemotherapy has failed are attempts to prevent pneumonias in patients with cardiac failure and in patients in coma, or with tracheotomy for respiratory paralysis. The same is true in the care of patients with indwelling catheters. If secondary infection does occur in these conditions it is much easier to treat it if chemoprophylaxis has not been attempted, as the causative organisms are much less likely to be resistant.

These are examples of the situations which Doctor Finland describes in detail. Many of these lessons have been repeatedly stated by various authorities during the past few years. They are lessons which cannot be repeated too frequently and no one is better qualified to present them to us than is Doctor Finland.

concluded on next page

CORTICOSTEROIDS AND TUBERCULOSIS

Corticosteroids, the drugs used widely in treatment of arthritis and other ailments, may activate tuberculosis. National Tuberculosis Association has warned in a special leaflet issued for physicians. The drugs in question include such commonly used hormones as cortisone and ACTH.

The warning mailed to state physicians by the Rhode Island Tuberculosis and Health Association, states that indiscriminate hormone treatment is dangerous for adults with inactive tuberculosis and for children who react positively to the tuberculin test, indicating that they have been infected with tubercle bacilli.

Summarizing medical reports on the subject, N.T.A. states that although the facts have been known to physicians for some years, activations are still occurring.

Doctor William B. O'Brien, superintendent of Zambarano Memorial Hospital, the state tuberculosis sanatorium at Wallum Lake, commented that the hospital staff encounters several tuberculosis cases annually that have been activated by hormone treatment of other diseases.

The N.T.A. warning calls attention to a "small but steady stream of seriously ill patients in whom either a latent infection or an inactive tuberculosis has become active following the administration of such steroids. It can be stated without hesitation that the prolonged administration of corticosteroids is likely to exert a harmful effect upon the latency and course of tuberculosis."

Prevention of such a "catastrophe" is simple, the reminder adds. Patients requiring steroid treatment for chronic conditions or for periods exceeding two weeks should be examined. Where evidence of previous tuberculosis is detected, or in young people with a strong reaction to tuberculin, daily administrations of isoniazid during the period of corticosteroid treatment is advised.

Doctor O'Brien, commenting on the state hospital's experience with this type of case, states: "Neither in the sanatorium itself nor in our outpatient department would we dare omit the protective treatment which isoniazid provides. The drug is so safe and so simple to administer that we have used it as a precautionary measure since it appeared in 1952." The Zambarano Hospital superintendent cited a patient hospitalized whose husband and son had had extensive surgery for tuberculosis.

"This patient had her regular precautionary X rays for tuberculosis detection until she suffered a severe case of rheumatoid arthritis. She was treated with the steroid drugs, and after a time developed symptoms of tuberculosis, including loss of weight. Ensuing chest X ray showed a full-blown case of tuberculosis—bilateral infection of

both lungs. Subsequent treatment with isoniazid has brought her tuberculosis under control, and fortunately she will recover."

N.T.A. calls attention to the importance of close observation of such patients during treatment, and of annual check-up for a year or two thereafter to make sure the protective treatment has been effective.

ECZEMA VACCINATUM

Appearing elsewhere in this issue is an interesting and timely report of two cases of eczema vaccinatum occurring in this area. It is a coincidence that another case of this serious condition is reported by Gerstein and Shelley in the June 9 issue of our distinguished contemporary, THE NEW ENGLAND JOURNAL OF MEDICINE. The latter case was that of an eighteen-year-old male suffering from long-standing Keratosis follicularis, exposed to a recently vaccinated five-year-old child. The treatment consisted of eight daily intramuscular injections of 1.5 grams of ordinary gamma globulin with a successful outcome.

Most pediatricians are aware of the risk and the serious nature of eczema vaccinatum. The present article, however, serves two useful purposes. It calls attention to general practitioners and others called upon to perform vaccination to the need for carefully protecting those contacts of recently vaccinated patients who may be suffering from open skin lesions. Also patients suffering from such conditions should not themselves be vaccinated.

The second point which is emphasized is the recent availability of a specific hyperimmune gamma globulin which seems to have an almost magical quality in neutralizing this virus.

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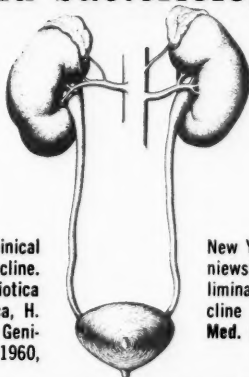
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1. Vineyard, J. P.; Hogan, J., and Sanford, J. P.: Clinical and Laboratory Evaluation of Demethylchlortetracycline. In: *Antibiotics Annual 1959-1960*, New York, Antibiotica Inc. 1960, p. 401-408. 2. Roberts, M. S.; Seneca, H. and Lattimer, J. K.: Demethylchlortetracycline in Genitourinary Infections. In: *Antibiotics Annual 1959-1960*,

New York, Antibiotica Inc. 1960, p. 424-428. 3. Rechinewski, C.; Garcia, A. E., and Loizaga, A. J. A.: Preliminary Report on the Use of Demethylchlortetracycline in Infections of the Urinary Tract. *Antibiotic Med. & Clin. Ther.* 7:235 (April) 1960.

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ECZEMA VACCINATUM*

WILLIAM B. COHEN, M.D. AND ARTURO LONGOBARDI, M.D.

The Authors. *William B. Cohen, M.D., Chief, Department of Dermatology; Arturo Longobardi, M.D., Intern; Memorial Hospital, Pawtucket, Rhode Island.*

ECZEMA VACCINATUM is defined as eczema complicated by infection with vaccine virus. Martin¹ of Boston first vividly described this condition in 1882. Mustard and Hendrick,² who reported a series of cases which occurred in the city of New York in 1947, stated that eczema and vaccinia are separate conditions, and therefore the designation eczema vaccinatum would constitute a third clinical entity. Generalized vaccinia is an uncommon complication following smallpox vaccination. Eczema vaccinatum on the other hand is a rare disease, dreaded for the severity of its clinical manifestations. McKhann³ in 1938 was disturbed by the fact that few American medical textbooks mentioned the dangers of vaccination to a person suffering from a skin disorder, or on contact with a vaccinated individual. The knowledge of these hazards is now widespread, but isolated incidents still occur. The fatality rate of eczema vaccinatum is very high; the mortality being about sixteen per cent. The younger the affected person, the more serious is the prognosis. As indicated by Busch,⁴ immunity in eczema vaccinatum may not be permanent. The majority of Martin's cases occurred in children in the first year of life. One of his cases was that of a seven-month-old infant, breast fed, suffering from eczema, who, sixteen days after the mother's vaccination, developed on his arms and elbows round, red papules, which later were transformed into vesicles with central umbilication. After a stormy course, the infant survived.

Case Report

M. S., a seven-month-old white, male infant, was admitted to the Memorial Hospital on 6-1-59 with eczema and fever. His mother stated that he had had infantile eczema since he was two weeks old with periods of remission and exacerbation. All

*Read at the Annual John F. Kenney Clinic Day, November 18, 1959, at the Pawtucket Memorial Hospital.

From the Dermatological and Pediatric Services, Pawtucket Memorial Hospital, and the Dermatological Service, Miriam Hospital, Providence, Rhode Island.

other five children in the family suffered from eczema in early infancy and had recovered. During the two days prior to admission, he became feverish, and the skin lesions had begun to weep. The baby had scratched the affected areas, especially the neck, wrists, and anterior chest. Up to that time the mother had used zinc oxide ointment without success and had fed him with a hypoallergenic milk. Discouraged by the persistence of the troublesome lesions, she had even consulted a chiropractor without avail.

Because of the persistent eczema, the common immunizations were withheld. No history of exanthemata or previous hospitalization was elicited. Notwithstanding the family background, and the fact that she was then suffering from a generalized eczema, a five-year-old sister had been vaccinated against smallpox on 5-19-59. She had developed a superimposed generalized cutaneous eruption one week later. At the same time a three-year-old brother was admitted to the hospital with a skin eruption. The course of the disease in these two children had been mild.

On physical examination the child appeared pale and feverish. He presented a generalized eruption, characterized by erythematous papulo-vesicular lesions, arranged in various sized patches. Facial pillars were slightly injected, neck slightly rigid, submaxillary and cervical lymphnodes palpable, and lungs and heart normal. The other findings were not remarkable.

Blood counts the day after admission were normal. Temperature showed daily elevations throughout. On 6-4-59 round, multiple vesicular lesions, umbilicated at the center appeared, located on healthy skin as well as eczematous areas. These resembled the exanthemata of varicella and variola, and appeared on the forehead, elbows, wrist, and umbilicus. At about the same time neck rigidity increased, and stupor and strabismus were noted. There was increasing dehydration. A lumbar puncture was traumatic yielding a bloody spinal fluid with 50 white cells. No bacteria were seen in smears of the fluid, and a culture was negative; protein, sugar, and chlorides could not be determined. Fluids were given first by clysis; but when it became apparent that dehydration was severe, a cut-down intravenous on the left ankle provided



FIGURE I

Shows acute lesions of eczema vaccinatum with typical umbilication.

adequate maintenance of the daily fluid requirements. In spite of intense antibiotic therapy, fever continued. When stools became loose, all antibiotics were discontinued. Therapy was shifted to Triamcinolone, and transfusion of whole fresh blood was given. The hemoglobin, because of the severe toxemia at this time, had dropped to 7 gms.; and the child's condition remained unimproved. The Department of Pediatrics of the Colorado School of Medicine was consulted concerning vaccinia hyperimmune gamma globulin, which was thereupon delivered by airmail and injected on 6-10-59, ten days after admission. Temperature promptly



FIGURE II

Shows skin lesions almost healed.

dropped and for the next 48 hours remained subnormal, and his general condition improved. A secondary rise in temperature, after 48 hours, related to the state of dehydration and electrolyte disturbance, was promptly controlled by correction of the underlying deficiencies. The skin condition gradually resolved with the drying up of the lesions. Antibiotic and steroid ointments were continued for several weeks; the total hospital stay was six weeks.

Discussion

The improvement that followed the administration of the gamma globulin, specific for this condition, was dramatic in our case. As Stimson and Hodes⁵ point out, the virus is precipitated and agglutinated *in vitro* by immune specific serum. A similar reaction *in vivo* probably accounts for the striking clinical response which occurred.

Acknowledgment

The authors wish to express their sincere appreciation to Earl F. Kelly, M.D., Chief of Department of Pediatrics and to the Department of Pediatrics, Pawtucket Memorial Hospital for their interest and kind co-operation in this case.

Addendum

S. S., female, age eighteen months, was admitted to Charles V. Chapin Hospital on May 27, 1960 because of a skin rash. Past history had been characterized by continuous eczema since birth. One month previous a four-year-old brother had been vaccinated by the family pediatrician. The new rash had the characteristic umbilicated appearance of eczema vaccinatum. Vaccinia immune globulin was administered on May 29, 1960. Recovery seems likely.

REFERENCES

- ¹Martin, H. A.; A most rare, possibly unique, case of general eruption of vaccinia, *Med. Rec.*, 21:393-396, April 1882.
- ²Mustard, H. S., Jr.; and Hendrick, P. W.; Generalized vaccinia. A study of fifteen cases, *J. Pediat.*, 33:281-294, September 1948.
- ³McKhann, C. F.; and Ross, R. A.; Generalized vaccinia and eczema vaccinatum, *M. Clin., North America*, 22:785-794, May 1938.
- ⁴Busch, N.; *Ueber Eczema Vaccinatum*, *Arch. f. Dermat. u. Syph.*, 167:471-480, 1933.
- ⁵Stimson, P. M.; and Hodes, H. L.; *A Manual of the Common Contagious Diseases*, 5th Ed., Philadelphia, Lea & Febiger, 1956.
- ⁶Ellis, F. A.; Eczema vaccinatum: Its relation to generalized vaccinia. Report of two cases. *J. A. M. A.*, 104:1891-1894, May 1935.
- ⁷Flexner, S.; Postvaccinal encephalitis and allied conditions, *J. A. M. A.*, 94:305-311, February 1930.
- ⁸Kempe, C. H.; *Newer Immunologic Concepts of Smallpox Vaccination*, *A.M.A. Am. J. Dis. Child.*, 88:519-520, October 1954.
- ⁹King, J. H., Jr.; and Forrest, R. L.; Vaccinia of the Eyelids. Treatment by aureomycin in a second case, *J. A. M. A.*, 153:31-32, September 1953.
- ¹⁰Platuo, E. S.; Eczema Vaccinatum, *Am. J. Dis. Child.*, 48:333-334, August 1934.
- ¹¹Tedder, J. W.; Eczema Vaccinatum, *Arch. Dermat. & Syph.*, 34:1008-1023, December, 1936.
- ¹²Smallpox Vaccination and Eczema, *Queries and Minor Notes*, *J. A. M. A.*, 123:250, September 1943.

ANTIBACTERIAL AGENTS: USES AND ABUSES IN TREATMENT AND PROPHYLAXIS

concluded from page 514

aration of the bowel for resectional surgery. At least one group of surgeons who have studied the use of this type of prophylaxis intensively for several years have now abandoned it as a routine.

Conclusions

The importance of the antimicrobial drugs and their primary role in the saving of life and in decreasing the morbidity from many serious infectious diseases is now well recognized. However, if the physician is to take the fullest advantage of these "miracle drugs," it is incumbent on him to stay alert to the developments in this field and to recognize the proper uses and limitations of the various drugs as they become available and after they have been used. He must, like the man whose name we honor tonight, maintain a critical attitude toward claims of panaceas. He should require evidence that is clear and well backed by reliable and unbiased observations rather than believe blindly in testimonials and perfunctory reports. He should demand facts instead of rationalizations or pious hopes.

From what I have said about the two aspects of the problem upon which I have dwelt this evening, it should be clear that not all of the hopes and expectations have been fulfilled, but that there is much that is valuable and useful in the proper application of antibiotics in the treatment and prevention of many important infections. For the physician to obtain the optimum benefit from these antimicrobial agents, he must use them within their demonstrated limitations with intelligence, restraint and discrimination.

REFERENCES

- ¹Rhode Island M. J. 27:265-272, June, 1944
- ²Anonymous. *Ibid.* 24:154, August, 1941
- ³Jawetz, E., and Gunnison, J. B.: Antibiotic synergism and antagonism: assessment of the problem. *Pharmacol. Rev.* 5:175-192, 1953
- ⁴Jawetz, E.: Combined Antibiotic Action; pp. 91-103 in *Biochemistry of Antibiotics*, edited by K. H. Spitzzy and R. Brunner, Pergamon Press, London, 1959, 239 pages
- ⁵*Idem.* Current Concepts in Therapy. Antibiotics IV. Combinations. *New England J. Med.* 258:747-748, 1958
- ⁶*Idem.* Combined antibiotic therapy in serious infections caused by drug-resistant staphylococci (1956-1957). *Arch. Int. Med.* 103:289-307, 1959
- ⁷Dowling, H. F.: Mixtures of antibiotics. *J.A.M.A.* 164:44-48, 1957
- ⁸Brook Lodge Invitational Symposium: Theory and Use of Antibiotic Combinations. *Postgrad. Med.* 22:421-428, 523-533, 1957
- ⁹Jones, W. F., Jr., and Finland, M.: Antibiotic combinations. Antistreptococcal and antistaphylococcal activity of plasma of normal subjects after ingestion of erythromycin or penicillin or both. *New England J. Med.* 255:1019-1024, 1956
- ¹⁰*Idem.* Antistreptococcal and antistaphylococcal activity of plasma of normal subjects after oral doses of penicillin, oleandomycin and combinations of these antibiotics. *Ibid.* 256:115-119, 1957
- ¹¹*Idem.* Antibacterial action of plasma of normal subjects after oral doses of penicillin V, tetracycline hydrochloride and a combination of both. *Ibid.* 256:869-875, 1957
- ¹²*Idem.* Tetracycline, erythromycin, oleandomycin and spiramycin, and combinations of tetracycline with each of the other three agents—comparisons of activity *in vitro* and antibacterial action of blood after oral administration. *Ibid.* 257:489-491, 536-547, 1957
- ¹³*Idem.* Antistreptococcal and antistaphylococcal activity of plasma of normal subjects after ingestion of erythromycin or chloramphenicol or both. *Ibid.* 257:744-748, 1957
- ¹⁴*Idem.* Antibacterial action of plasma after ingestion of novobiocin in penicillin G or both. *Ibid.* 257:1268-1274, 1957
- ¹⁵Hirsch, H. A., and Finland, M.: Antibiotic combinations. Antibacterial action of serum after ingestion of novobiocin or tetracycline or both. *Ibid.* 262:203-214, 1960
- ¹⁶Killough, J. H.: Combination antibiotic therapy of brucellosis. *Postgrad. Med.* 22:527, 1957
- ¹⁷Finland, M.: Chemoprophylaxis of infectious diseases. I. General considerations and application to streptococcal infections, rheumatic fever, glomerulonephritis and bacterial endocarditis. *DM: Disease-a-Month*, Dec., 1959; II. Other applications in general medical and pediatric practice, *Ibid.*, July, 1960. III. Applications in surgical and obstetrical practice; general discussion and summary, *Ibid.*, September, 1960.
- ¹⁸Finland, M., Jones, W. F., Jr., and Barnes, M. W.: Occurrence of serious bacterial infections since introduction of antibacterial agents. *J.A.M.A.* 170:2188-2197, 1959

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Wednesday, September 28. House of Delegates, Rhode Island Medical Society, Medical Library (8:00 P.M.).

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*Knudsen, E. T., and Rolinson, G. N.: *Lancet* 2:1105 (Dec. 19) 1959. *CHEMIPEN is a SQUIBB TRADEMARK.

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THE PULMONARY MICROCIRCULATION*

JOHN W. IRWIN, M.D.

The Author, *John W. Irwin, M.D., of Boston, Massachusetts. Director, Microcirculatory Laboratory, Massachusetts Eye and Ear Infirmary, Boston.*

IN THE MAMMAL, one important phase of respiration is the movement of carbon dioxide and oxygen through the walls of the pulmonary capillaries. Interference with this vital process can lead to disaster, pertinent examples of which are pulmonary edema and pulmonary emphysema. Many methods, both direct and indirect, have been employed to study this phase of respiration. The purposes of this paper are to describe the morphology and some physiological concepts of the pulmonary microcirculation of living animals.

Materials and Methods

The experimental animals have been guinea pigs, rabbits, and cats. Only active, well-nourished animals free of skin lesions and vermin have been used. Sodium pentobarbital (0.045 Gm. per kilogram of body weight) was administered before surgery, and additional amounts were given as needed. Surgical technics, including tracheotomy to enable the constant intratracheal insufflation of oxygen to quiet respiratory movements and thoracotomy to expose a portion of the right lung for microscopy, were standardized to reduce hemorrhage and trauma to a bare minimum. Both procedures have been described in detail.^{1,2}

The edge of the lung, the circulation of which was to be studied, was transilluminated by using a quartz rod. Light was transmitted from a G.E. T-12 1000-Watt projection bulb to the under surface of the edge of the exposed lung by a fused quartz rod with a hollow tip, which allowed Ringer's solution at 38°C to flow at a constant rate.

The exposed lung rested on the Ringer's solution issuing from the tip of the quartz rod. This lessened the transmission of the heat of light to the living lung. Microscopes used were a Leitz stereoscopic microscope with magnifications 48X to 150X

*Presented at the 149th Annual Meeting of the Rhode Island Medical Society, at Providence, Rhode Island, May 11, 1960.

Supported by grants from the Mary Dexter Fund, Lakeside Laboratories, Inc., and the National Tuberculosis Association.

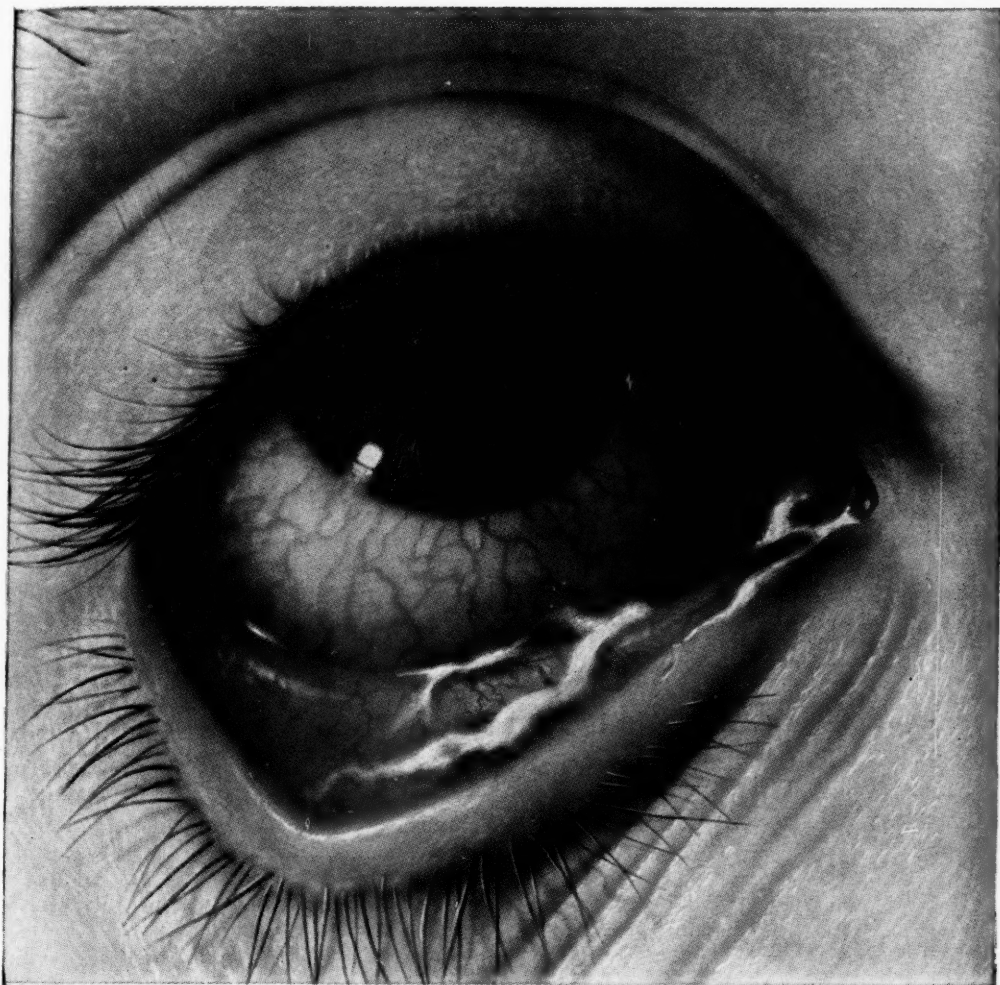
and a monocular, monobjective, compound microscope with magnifications up to 900X. Precise description of instrumentation has been reported previously.²

The use of these preparations enabled us to study the pulmonary microcirculation of living animals. It was possible to determine the microvascular patterns of the lung, to observe the linear flow of blood, to study the walls of the various pulmonary blood vessels, to consider the ability of the various vessels to constrict and dilate, and to observe the state of the various cells of blood. Similar observations were made after the intravenous injection of various chemicals such as histamine, epinephrine, and an *N*-substituted arterenol (Caytine). The pulmonary microvascular bed of rabbits was also studied during active and passive anaphylaxis.

For active sensitization each of four toe pads of the rabbit was injected with .02 ml. Freund's adjuvant which contained 15-25 mg. bovine serum albumin per ml. emulsion. After two to three weeks a booster intravenous injection of about 15 mg. bovine serum albumin in saline was given. One week later blood was drawn and the amount of antibody nitrogen per ml. of serum was determined by use of a Beckman Spectrophotometer. Then the lung was exposed and the pulmonary microcirculation was studied both before and after the intravenous injection of bovine serum albumin which was given in the ratio of 1:2 in relation to circulating bovine serum albumin antibody nitrogen. For passive anaphylaxis rabbits were sensitized similarly and bled. The serum was pooled. The amount of antibody nitrogen per ml. of this pool was determined. Twenty-four hours previous to an intravenous injection of a known amount of antigen (bovine serum albumin), normal rabbits were injected intravenously with this pooled serum on a basis of known amount of antibody nitrogen.

To determine the pressures in the small pulmonary blood vessels of living mammals, various micro-vessels were directly cannulated. The micro-cannulas were made from quartz or pyrex tubing 1-3 mm. O.D. with T5/20 female joint. The tip was drawn so that it was no longer than 75 micra with an internal diameter of its orifice being 25 to 35 micra. The total length of the cannula did not exceed 7.5 cm. The microphone, adapter, and

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1. Lippmann, O.: Arch. Ophth. 57:339, March 1957.
2. Gordon, D.M.: Am. J. Ophth. 46:740, November 1958.

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THE PULMONARY MICROCIRCULATION

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cannula were filled with Ringer's solution (free of air bubbles). These three units fitted together so that the resulting unit could be fitted to a micro-manipulator. A capacitance electromanometer was used. A standard Sanborn Electromanometer was modified so that a mobile coaxial cable (CPH Amphenol RC69/U) connected the microphone to the bridge. Weille et al³ have described this pressure equipment. The tips of the cannulas were inserted into the lumina of various micropulmonary blood vessels with the aid of the micromanipulator and a microscope.

Vascular Pattern of the Pulmonary Microcirculation

With the described technics it was possible to visualize clearly only the surface of the exposed lung. The diameters of the largest arterioles and venules in cats and rabbits did not exceed 200 micra, whereas the largest in guinea pigs were 20 micra. Larger arterioles, arteries, venules, and veins were obviously too deep to be resolved.

In cats and rabbits pulmonary arterioles could be followed from vessels of 200 micra in diameter to terminal arterioles supplying the capillaries. This decrease from 200 micra could occur within three branchings of the main pulmonary arteriole. Blunt termination of the arterioles frequently could be observed at 500X magnification. Red blood cells could be seen leaving the arteriole and scattering into various capillaries. The arterioles appeared to lie in the septa between alveoli whereas capillaries formed complicated networks over alveoli.

Several venules always drained the network of capillaries over each alveolus. The end venules within three anastomoses could form a venule of 200 micra diameter. This could occur within one low-power microscopic field.

Infrequently, arteriovenous shunts between pulmonary arterioles and venules were located. To find such shunts it was imperative to find a pulmonary arteriole and venule running beside each other. Careful observation of two such vessels over a period of time on occasion led to finding an open shunt between the two vessels. Flow was always from pulmonary arteriole to pulmonary venule. Such shunts did not have a diameter greater than 20 micra.

Arterioles and venules took the form of cones, whereas capillaries appeared as cylindrical tubes. Open arteriovenous anastomoses also seemed to be cylindrical tubes.

Physiological Observations

Under the described experimental conditions linear blood flow in any one microscopic vessel

varied from a rapid rate to stagnation. Rate of flow appeared to depend on two factors: cardiac rate and the caliber of the micropulmonary blood vessels under study. An increase in cardiac rate frequently was attended by an increased rate of flow in the microscopic pulmonary vasculature, and partial constriction of this pulmonary vascular bed led to an increased rate of flow in all open vessels.

In the mammals under observation, all micropulmonary vessels appeared to contract and dilate. Arterioles and venules could constrict to such a degree that no blood cells could pass the contracted area. A whole vessel could contract or segmental (only a portion of the vessel) constriction could occur. Opposite walls of pulmonary capillaries were seen to come together. It has not been determined whether this phenomenon was due to passive collapse of walls, active constriction, or swelling of the endothelial cells of the capillary walls. Whatever the cause of the occlusion of the capillary lumen, it was evident that no erythrocytes passed through the capillary lumen when opposite capillary walls approached each other. Since changes occurred regularly in all animals studied, it became evident that intermittence of blood flow in the pulmonary microcirculation was the rule for quiescent, anesthetized mammals prepared according to previous description.

Other common events noted included: axial stream of cellular elements; plasma layer; white blood cells rolling along vessel walls; corpuscles passing through capillaries in single file; sausage-like forms of erythrocytes as they squeezed through pulmonary capillaries with diameters less than 5 micra; oscillation of corpuscles in arterioles, capillaries, and venules; and plasma skimming. By plasma skimming, the following is indicated: the end of the terminal arteriole constricts so that erythrocytes generally do not pass into the capillary, but plasma does pass. This was confirmed by the observation that occasionally a red cell squeezed through the end of a constricted pulmonary arteriole and was swept rapidly through the capillary bed.

With the use of the described electromanometer it was possible to secure pressuregrams from the right ventricle, pulmonary artery, a pulmonary vein, and in pulmonary arterioles and venules with diameters as small as 50 micra. No pressuregrams have been secured from pulmonary capillaries. This manometer and pressuregrams secured from the pulmonary microcirculation are described by Rapaport et al.⁴ It was of interest that sequential pressures secured in the right ventricle, pulmonary artery, and a pulmonary arteriole with a diameter of 50 micra were quite similar but pressures in pulmonary venules and veins were lower. These

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Acute low back strain	25	19	8	6	58
Chronic low back strain	11	5	1	1	18
"Porters' syndrome"*	21	5	1	1	28
Pelvic fractures	2	1	—	—	3
NECK SYNDROMES					
Whiplash injuries	12	6	2	1	21
Torticollis, chronic	6	2	3	2	13
OTHER MUSCLE SPASM					
Spasm related to trauma	15	6	1	—	22
Rheumatoid arthritis	—	18	2	1	21
Bursitis	2	6	1	—	9
TENSION STATES	18	2	4	3	27
TOTALS	112 (51%)	70 (32%)	23 (10%)	15 (7%)	220 (100%)

*Over-reaching in lifting heavy bags resulting in sprain of upper, middle, and lower back muscles.

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1. Kearney, R. D.: *Current Therap. Res.* 2:127, April, 1960.

THE PULMONARY MICROCIRCULATION

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results would indicate that the great drop in pressure in the pulmonary vasculature occurs between arterioles of 50 micra and venules of 50 micra.

When microcannulas were being inserted into pulmonary arterioles and venules, it was noted that the vessel tended to constrict. If blood escaped when the tip of the cannula was withdrawn from the lumen, adjoining vessels also constricted. Perhaps chemical action accounted for this localized constriction of the vascular bed.

Pharmacological Considerations

The effects of histamine and epinephrine on the pulmonary microcirculation have been studied and reported.⁵ Lethal intravenous doses of histamine caused dilatation of pulmonary capillaries and contraction of arterioles and venules. "Hyaline" emboli, as well as aggregates of erythrocytes, appeared during histamine shock. As yet the exact constituents of these emboli have not been determined. Recently it has been noted that local application of histamine to a section of lung under observation caused similar changes in vessels which histamine contacted.

Intravenous epinephrine led to constriction of pulmonary arterioles and venules with slowing of linear blood flow, but within one minute dilatation occurred with an increased linear blood flow. When epinephrine was applied locally to a field, similar changes were noted in the vessels of the treated area. This would suggest that the action of epinephrine was, at least in part, directly on the small pulmonary blood vessels.

In recent months an *N*-substituted arterenol derivative, alpha (alpha-methyl-3, 4-methylene-dioxyphenylethylamino) methyl protocatechuy alcohol hydrochloride, has been studied in regard to its effects on the pulmonary microcirculation. This compound in intravenous doses of 0.1 mg. or more per kilogram increased the rate of linear blood flow as well as the heart rate, but it did not increase the pressure in any pulmonary arteriole or venule. This suggested that the pulmonary vascular bed dilated, and microscopic observation confirmed this suggestion. When pulmonary arterioles and venules constricted, this phase lasted less than one minute.

Anaphylaxis

During both active and passive anaphylaxis, marked changes have been observed in the pulmonary microcirculation. Burrage and Irwin⁶ have described these changes during active anaphylaxis. These reported changes included marked constriction of arterioles, obliteration of capillaries, constriction of venules, aggregates of erythrocytes,

and "hyaline" emboli. All such changes must seriously interfere with the exchange of oxygen and carbon dioxide at the alveolar level. In recent unreported experiments the same changes were noted during passive anaphylaxis. It is of considerable interest that no sensitized mammal in these experiments has ever died following the shocking dose of antigen unless constriction of the pulmonary microcirculation or marked embolization of the microscopic pulmonary vessels or a combination of both was observed.

The so-called "hyaline" emboli have been irregular sized masses of similar consistency. Their composition remains unknown, but several hypotheses appear feasible: antigen-antibody complexes, platelet thrombi, white blood cells, and altered proteins. Germuth and McKinnon⁷ presented evidence to favor antigen-antibody complexes, but Burrage et al.⁵ found similar "hyaline" emboli during histamine shock where antigen-antibody complexes could not have been involved.

Discussion

From a theoretical viewpoint one might think that the flow of blood through the lungs would be constant and that each microscopic area of circulation would carry its share of the operational load. Under the described experimental approach, however, such does not seem to be true. Not infrequently, microscopic pulmonary circulation in one area was quiescent while adjoining areas showed activity. It is to be admitted that these mammals were deeply anesthetized, that their respiratory movements were depressed, that the thoracic cavity was open to atmospheric pressure, and that they were on a high concentration of oxygen. In certain experiments, however, mammals were maintained alive for 72 hours under these conditions. Then there was no question of the ability of pulmonary arterioles and venules to constrict and dilate under the experimental conditions, during pharmacological stimulation, and in anaphylactic shock. If such ability exists, it might well be reasoned that even under normal conditions blood flow is intermittent in any one microscopic area and constriction and dilation of the microscopic pulmonary vessels do occur. One could state that it was possible to observe only alveoli on the surface of the lung and that the deeper alveoli might well be different, but each unit of any lobulated organ is assumed to be like any other similar unit of the same organ.

If one accepts the marked ability of the pulmonary microcirculation to react to various stimuli, one has to accept its ability to adapt readily in aiding the body to adjust to certain pathological states. For example, patients with mitral stenosis may not develop pulmonary edema for years.

The anaphylactic experiments suggest that the

pulmonary microcirculation can be so markedly involved that its ability to adjust is overcome. There are other experimental data to support these findings. Cameron and De⁸ injected a fibrin-forming mixture cisternally, and these animals died with pulmonary edema. These investigators felt that they stimulated the vagi centers in the brain to such an extent that the permeability of pulmonary capillaries was increased enough to cause pulmonary edema. Clinically, it is well known that pulmonary edema is frequent in patients with an acute increase in intracranial pressure and a sudden elevation of blood pressure.

The intricate network of capillaries over each alveolus is a delicate system, and one must be very careful not to injure an area while studying it. The lung of the human is repeatedly insulted during life. Bremer⁹ showed that there is postnatal development of alveoli in the mammalian lung, but he felt that in the human new functional lung tissue was not formed after the mid-twenties. Alveoli destroyed in adult life may well not be replaced. In the development of pulmonary emphysema, many millions of alveoli and their capillaries are no doubt destroyed before symptoms occur. It would seem that the etiology of emphysema is the important thing to determine for once symptoms appear there is probably little that can be done.

CONCLUSIONS

1. The pattern of the pulmonary microcirculation of the mammal is complex.
2. Physiologically, the small blood vessels of the mammal are most active and at any particular moment the activity of one vessel can be different from a similar vessel.
3. During pharmacological stimulation and anaphylaxis, the microscopic pulmonary blood vessels can react together so markedly that the life of the animal is threatened.

REFERENCES

- ¹Irwin, J. W., and Macdonald, J.: Microscopic Observations of the Intrahepatic Circulation of Living Guinea Pigs. *Anat. Rec.* 117:1-15 (Sept.) 1953
- ²Irwin, J. W.; Burrage, W. S.; Aimar, C. E., and Chesnut, R. W., Jr.: Microscopical Observations of the Pulmonary Arterioles, Capillaries and Venules of Living Guinea Pigs and Rabbits. *Anat. Rec.* 119:391-408 (July) 1954
- ³Weille, F. L.; Irwin, J. W.; Jako, G.; Holschuh, L. L.; Weille, A. S.; Stanley, C. A., and Rappaport, M. B.: Pressures of the Labyrinthine Fluids. *Ann. Otol., Rhinol. and Laryngol.* 67:858-869 (Sept.) 1958
- ⁴Rappaport, M. B.; Bloch, E. H., and Irwin, J. W.: A Manometer for Measuring Dynamic Pressures in the Microvascular System. *J. App. Physiol.*, Vol. 14, No. 4, July 1959, pp. 651, 655
- ⁵Burrage, W. S.; Irwin, J. W.; Gallemore, J. I., and Wang, D. M. K.: Effects of Histamine and Epinephrine on the Small Pulmonary Blood Vessels of Living Rabbits. *J. Allergy* 25:293-301 (July) 1954
- ⁶Burrage, W. S., and Irwin, J. W.: Microscopic Observations of the Pulmonary Arterioles, Capillaries, and Venules of Living Mammals Before and During Anaphylaxis. *J. Allergy* 24:289-296 (July) 1953
- ⁷Germuth, F. G., and McKinnon, G. E.: Studies on the Biological Properties of Antigen-Antibody Complexes in Unsensitized Normal Guinea Pigs. *Bull. J. Hopkins Hospital* 101:13-44 (July) 1957
- ⁸Cameron, G. R., and De, S. N.: Experimental Pulmonary Oedema of Nervous Origin. *J. Path. & Bact.* 61:375-387 (July) 1949
- ⁹Bremer, J. L.: Postnatal Development of Alveoli in the Mammalian Lung in Relation to the Problem of the Alveolar Phagocyte. *Carnegie Inst. of Wash., Contr. to Embryology* 25: No. 147, 83-112, 1935

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THE AMERICAN MEDICAL ASSOCIATION

Report of Delegates to the Annual Session

Held at Miami Beach, Florida, June 13-17, 1960

CHARLES J. ASHWORTH, M.D., *Delegate*
ARTHUR E. HARDY, M.D., *Alternate Delegate*

DUE TO THE WIDE difference of opinion among our members, the doctors of Rhode Island should have an especial interest in the action taken by the House of Delegates of the American Medical Association on the matter of inclusion of physicians under Title II of the Social Security Act.

The Georgia Delegation of three members, representing three thousand or more doctors, initiated the discussion by the introduction of a resolution which is worthy of quoting in full:

Whereas, The inclusion of physicians within the provisions of the Social Security Act (OASDI—Title II) is presently under consideration in The Congress; and

Whereas, This legislation would be unjust and unreasonable because OASDI does not fit the economic pattern of the practicing physician in that self-employed doctors rarely retire at age 65; and

Whereas, It is incompatible for physicians to oppose the further expansion of OASDI as a method of compulsory health insurance and yet support their inclusion in a system which may abridge their freedom of practice; and

Whereas, The 1960 House of Delegates of the Medical Association of Georgia reaffirmed its opposition to the inclusion of physicians under OASDI and instructed its AMA Delegation to introduce such a resolution to the AMA House of Delegates; and now therefore be it

Resolved, That the House of Delegates of the American Medical Association reaffirm its opposition to the inclusion of physicians under OASDI coverage; and be it further

Resolved, That the AMA, as a representative of the medical profession in the United States, continue its efforts in making this policy known to all members of the Congress to the end that physicians be not included in OASDI coverage by the federal government.

The Georgia Resolution furnished the basis for the report of the reference committee on Legislation and Public Relations, which reference committee reaffirmed the A.M.A. opposition to the extension of social security coverage to doctors of medicine. It further recommended that all mem-

bers write members of Congress and the White House, urging such exclusion. This action was taken with full recognition of the fact that Congress may blanket in doctors of medicine, because many doctors have appealed for inclusion under O.A.S.D.I. benefits. The fact remains, however, that a preponderant number of members of the A.M.A., reflecting as they do the desires of the thousands of doctors they represent, are still against compulsory inclusion under Title II of the Social Security Act. Discussion before this reference committee indicated that no change in opinion on this matter since the last annual meeting in Atlantic City in June, 1959, has developed. Consequently, the recommendation as above stated as adopted.

Health Care of the Aged

Resolutions and comments on the subject of health care for the aged resulted in the adoption of the following statement by the House of Delegates as the official policy of the American Medical Association:

"Personal medical care is primarily the responsibility of the individual. When he is unable to provide this care for himself, the responsibility should properly pass to his family, the community, the county, the state, and only when all these fail, to the federal government, and then only in conjunction with the other levels of government, in the above order. The determination of medical need should be made by a physician and the determination of eligibility should be made at the local level with local administration and control. The principle of freedom of choice should be preserved. The use of tax funds under the above conditions to pay for such care, whether through the purchase of health insurance or by direct payment, provided local option is assured, is inherent in this concept and is not inconsistent with previous actions of the House of Delegates of the American Medical Association."

The House also urged the Board of Trustees "to initiate a nonpartisan open assembly to which all interested representative groups are invited for the purpose of developing the specifics of a sound approach to the health service and facilities needed

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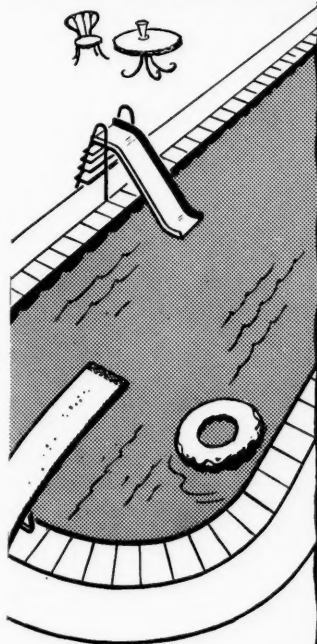


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REPORT OF DELEGATES

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by the aged, and that thereafter the American Medical Association present its findings and positive principles to the people."

In connection with an educational program regarding the aged, the House declared that "the American Medical Association increase its educational program regarding employment of those over 65, emphasizing voluntary, gradual and individualized retirement, thereby giving these individuals not only the right to work but the right to live in a free society with dignity and pride."

Relations With National Foundation

Relations between the medical profession and the National Foundation for poliomyelitis involved two actions by the House of Delegates. It adopted a statement of policies for the guidance of state medical associations and recommended that they be adopted by all component medical societies. These policies cover such subjects as membership of medical advisory committees at the chapter level, the function of these committees, and basic principles concerning financial assistance for medical care, payment for physicians' services and physicians' responsibilities for constructive leadership in medical advisory activities.

RHODE ISLAND MEDICAL JOURNAL

In another action the House directed the Board of Trustees to authorize further conferences with leaders in the National Foundation on the problem of poliomyelitis as it relates to the betterment of the public health and to consider further joint action toward the eradication of polio. The House commended the National Foundation for its outstanding service in the attack against polio, but pointed out that much work remains to be done in public education, vaccination, continuing assistance for polio victims and continued research.

Miscellaneous Matters

In dealing with reports and resolutions on a wide variety of other subjects, the House also:

Strongly reaffirmed its support of the *Blue Shield concept* in voluntary health insurance and approved specific recommendations concerning A.M.A.-Blue Shield relationships;

Approved a contingent appointment of not more than six months for *foreign medical school graduates* who have been accepted for the September, 1960, qualification examination;

Agreed that the American Medical Association should sponsor a *second National Congress on pre-paid health insurance*;

Approved a Board of Trustees request to the Postmaster General for a stamp commemorating



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the Mayo Brothers;

Decided that the establishment of a home for aged and retired physicians is not warranted at this time.

Approved the establishment of a new "Scientific Achievement Award" to be given to a non-physician scientist on special occasions for outstanding work;

Approved the following schedule for future annual meetings: Atlantic City, 1963; San Francisco, 1964, and New York City, 1965;

Approved the objectives of the A.M.A. Commission on the Cost of Medical Care established by the Board of Trustees and headed by Dr. Louis M. Orr, immediate past president of the Association;

Urged individual members of the Association to take a greater interest and more active part in public affairs on all levels;

Reaffirmed its opposition to compulsory inclusion of physicians under Title II of the Social Security Act and recommended immediate action by all A.M.A. members who agree with that position;

Called for a review of existing and proposed legislation pertaining to food and color additives, with the objection of supporting appropriate measures which are in the public interest;

Urged reform of the federal tax structure so as

to return to the states and their political subdivisions, their traditional revenue sources;

Asked state and county medical societies to make greater use of A.M.A. recruitment materials in presenting medicine's story to the nation's high schools;

Requested the Board of Trustees to initiate a study of present policy regarding the required content and method of preparing hospital records;

Commended the Department of Defense and the Air Force for establishing and operating the Aero-medical Transport Service and urged that it be maintained at optimum efficiency;

Directed the Board of Trustees to develop group annuity and group disability insurance programs for Association members; and

Expressed grave concern over the indiscriminate use of contact lenses.

Officers Elected

Dr. Leonard W. Larson of Bismarck, N. D., former chairman of the A.M.A. Board of Trustees and of the A.M.A. Commission on Medical Care Plans, was named president-elect by unanimous vote. Dr. Larson will succeed Dr. E. Vincent Askey of Los Angeles as president at the Association's annual meeting in June, 1961, at New York City.

The A.M.A. 1960 Distinguished Service Award,

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Rhode Island Contracts with Vermont Medical School for Admissions

Under a new New England Board of Higher Education-sponsored plan, Rhode Island has contracted through the board with the University of Vermont to reserve up to ten places for its residents in the UVM College of Medicine.

This contract was made under the provisions of a new proposal designed to deal with the problem of the declining enrollment of New Englanders in New England medical schools. Under the new program, states desiring to encourage more of their residents to undertake the study of medicine and dentistry may enter into contractual agreements with the New England Board. The Board in turn will contract with co-operating medical schools for the reservation of a specific number of places for qualified residents of the contracting state.

The contract provides that the university shall retain full control over the admission of students to the College of Medicine: "Nothing contained in this agreement shall be deemed to extend to the Board or to the (contracting) state any control over admissions, instructional methods, curricula or standards in the College of Medicine of the University or over disciplinary action with respect to students enrolled from time to time therein, all such matters being within the exclusive control of the University."

At present the UVM College of Medicine is the only medical school in the region taking part in the contract program.

For each of the ten places which is filled, Rhode Island will pay \$2,500 through the Board to the University of Vermont. Rhode Island residents attending the University of Vermont College of Medicine under the contract plan will pay in-state tuition (\$550). The established tuition for out-of-state students is \$1,500. Thus Rhode Island students, in effect, will receive a \$950 scholarship from their home state. Estimated total cost of educating a medical student is \$5,000 per year.

Doctor George Wolfe, dean of the UVM College of Medicine, pointed out that from the point of view of the individual student who is attending that institution, the contract plan does not, in itself, guarantee a reduced tuition rate. All students from a contracting state at the UVM College of Medicine up to the number provided for in the contract will receive tuition remissions. Students who are admitted above and beyond the quota will not be eligible for such remissions.

127 Million Persons Have Health Insurance

More than 127 million Americans—72 per cent of the civilian population—had health insurance at the end of 1959, the Health Insurance Council said recently in reporting the results of its 14th annual survey on the extent of voluntary health insurance coverage in the United States. The survey is based on reports from insurance companies, Blue Cross-Blue Shield and other health care plans.

The Council said both the number of persons covered by health insurance and the amount of benefits paid reached new highs last year. Coverage increased by 4.8 million during 1959 to reach a total of 127,896,000 persons with health insurance protection.

Benefit payments by all health insuring organizations to help cover the cost of hospital, surgical and medical care amounted in 1959 to more than \$4.3 billion, up \$400 million over 1958, said the Council. In addition, persons with loss-of-income policies received \$838 million in benefits from insurance companies to replace income lost through disability.

Thus, a grand total of \$5,175,000,000 in health insurance benefits were distributed during 1959, up 10.9 per cent over 1958.

The HIC, a federation of insurance associations, said that based on the early trends for 1960 it estimated that as of June 1, some 130 million persons (73 per cent of the civilian population) had hospital expense insurance, 118 million had surgical expense insurance, 84 million had regular medical expense insurance, 24 million had major medical

expense insurance, and 44 million were insured against loss of income.

The Council said these figures also revealed the breadth of health insurance protection which Americans have. The organization said as of June 1, more than 90 per cent of persons with health insurance have both hospital and surgical expense insurance, and 65 per cent have hospital, surgical and regular medical expense insurance, which helps pay for doctor visits for nonsurgical care. Five years ago, the figures were, respectively, 85 and 47 per cent.

National Blue Shield Study Commission

Establishment of a Blue Shield Study Commission has been announced by the National Association of Blue Shield Plans, to undertake a major study of the "differences of concept and coverage" among the nation's 75 Blue Shield Plans which "have resulted in different approaches to the problem of providing adequate protection to the public."

In announcing the appointment of this new Commission, Doctor Donald Stubbs, chairman of the Board of the National Association, pointed out that while the setting up of this Commission was directed by the Annual Conference of Blue Shield Plans in Los Angeles in April, its area of study and recommendation is logically related to the action of the A.M.A. House of Delegates in Miami on June 15, in reiterating A.M.A. support of the Blue Shield Concept and providing for strengthened liaison between A.M.A. and Blue Shield Plans.

"The job of this new Blue Shield Study Commission," said Dr. Stubbs, "is to identify and pinpoint the specific problems that must be solved and the needs that must be met within Blue Shield if it is to be able to extend the broadest possible medical prepayment protection, under medical auspices, to the greatest possible number of people, and thus make the maximum contribution both to the public welfare and to the free practice of medicine."

Chairman of the nine-man Commission is Doctor Henry S. Blake of Topeka, Kansas.

Snails . . . Geiger Counters . . . Teeth

Snails and geiger counters are helping scientists learn why teeth decay, a noted dental research worker reported recently.

Doctor George Paffenbarger, Washington, D. C., described the use of snails and atomic radiation in dental research studies now being carried out jointly at the National Bureau of Standards and the National Institute of Dental Research.

The long-range purpose of such studies, he said, is to determine how dental enamel is formed and how it decays. He described tooth enamel as the hardest substance in the human body and yet the

one with the least ability to repair itself.

Snails are being used in the project, he said, because of the calcium content of their shells. They are exposed to two radioactive compounds (strontium 89 and calcium 45) and the amount of uptake is measured with geiger counters and other instruments. "The immediate aim of the study, which is still in its early stages, is to learn how calcium carbonate is incorporated into teeth as they develop in the jaws," he said.

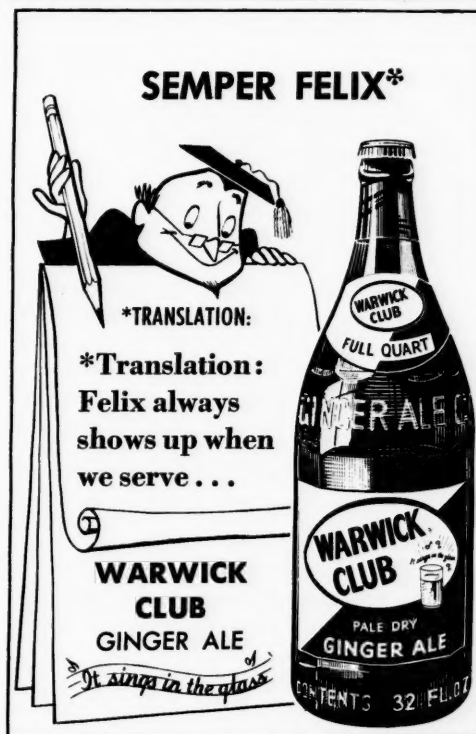
Doctor Paffenbarger is senior research associate of the American Dental Association and has conducted studies at the Bureau for more than twenty-five years. He reported on current dental research programs before the annual meeting of the Dental Manufacturers of America.

Surgeons Seek Improvement in Total Care of Surgical Patients

Improvement in the total care of surgical patients will be the goal of 10,000 doctors expected to attend the 46th annual Clinical Congress of the American College of Surgeons in San Francisco, California, October 10 through 14.

Doctors from all parts of the nation and many foreign countries will attend sessions at this largest meeting of surgeons. More than 1,000 participants will take part in the various programs as authors

continued on next page



of research reports, teachers of postgraduate courses, participants in panel discussions, lecturers, and operating surgeons in motion pictures and closed-circuit telecasts.

Major addresses will be made by Doctor I. S. Ravdin, Philadelphia, chairman, Board of Regents, and incoming president of the College; Doctor Joseph Trueta, Oxford, England, will speak on trauma and the living cell; Doctor Wendell M. Stanley, director of the virus laboratory at University of California, Berkeley, and Nobel winner in chemistry, will deliver the Martin Memorial Lecture, named for the College founder, Franklin H. Martin, on the subject of virus-cancer relationships; Mr. Leslie Philip Le Quesne, London, England, will give the annual Baxter Lecture, speaking on body fluid disturbances resulting from stomach obstruction.

On the final evening, October 14, initiates will be presented for fellowship, honorary fellowships conferred, and officers inaugurated.

Foreign M.D.'s Training in U. S. Doubled Since 1954

The number of foreign physicians training in U. S. hospitals has almost doubled since 1954, the Institute of International Education reported in a survey released recently.

This year (1959-60) our hospitals reported 9,457 foreign physicians in training, an increase of 13% over the previous year. Part of this rise, however, resulted from a 9.3% increase in the number of hospitals reporting to the survey.

In light of the recent action of the Council on Medical Education requiring foreign interns and residents to pass the American Medical Qualification Examination, this annual increase of foreign physicians in U. S. hospitals may be halted and even reversed in the future.

Physicians from the Far East again led the foreign medical delegation this year with 38.5% of the total number, followed by 19.4% from Latin America, 18.1% from the Near and Middle East, and 16.3% from Europe. The Philippines, with 2,319, was again the largest single source of foreign men and women studying medicine here, and accounted alone for a 337 increase over last year's total figure.

These statistics are revealed in the sixth edition of OPEN DOORS, the Institute's annual statistical report on educational exchange. Besides foreign physicians, the survey also reports on the exchange of U. S. and foreign students and faculty members.

Forty-five states, the District of Columbia and Puerto Rico reported foreign physicians in their hospitals, with New York claiming a full 25% of the total. Of the 928 hospitals reporting doctors

from abroad, 15 reported more than 50. New York's Bellevue Hospital Center led the list with 87, while the King's County Medical Center in Brooklyn, N. Y., was second with 75.

OPEN DOORS 1960 reports that the ratio of foreign residents to interns remained much the same as in previous years, with the 1959-60 figures showing 6,912 residents and 2,545 interns from abroad in U. S. hospitals. The survey, which this year is able to report on the fields of specialization of the foreign resident physicians, shows that 1,401 were training in general surgery, 787 in general medicine, 677 in pathology, 566 in psychiatry, and 540 in obstetrics gynecology.

Disaster Conference Set for Next Month

For those interested in disaster preparedness, all roads will lead to Minneapolis in September. The annual conference of the U. S. Civil Defense Council, to be held at the Leamington Hotel, September 19-23, 1960, will be the largest gathering of civil defense and disaster workers ever held in the United States. For the first time, city, county and state civil defense directors will be meeting simultaneously and, in some instances, jointly.

The Medical and Health Committee of the USCDC has prepared an outstanding two-day program divided into formal lectures and extensive workshops for September 21-22. Highlighted will be the latest information concerning chemical and biological nonmilitary defense and a thorough analysis of the health mobilization program of the U. S. Public Health Service. A Citation Banquet is planned at which outstanding figures in the field of medical disaster preparedness will be honored. The Committee welcomes nominations from medical and health groups and other scientific organizations.

Prizes for Clinical or Laboratory Research in Urology

The American Urological Association offers an annual award of \$1000 (first prize of \$500, second prize \$300, and third prize \$200) for essays on the result of some clinical or laboratory research in urology. Competition is limited to urologists who have been graduated not more than ten years, and to hospital interns and residents doing research work in urology.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Hotel Biltmore, Los Angeles, California, May 22-25, 1961.

For full particulars write the *Executive Secretary*, WILLIAM P. DIDUSCH, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before December 1, 1960.

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INTERIM MEETING

The RHODE ISLAND MEDICAL SOCIETY*Wednesday, November 9, 1960*

at 3:00 P.M.

at the

SQUANTUM CLUB

East Providence, Rhode Island

THROUGH THE MICROSCOPE

*concluded from page 534****Fringe Benefits Get \$5 of Every \$100***

The total cost of the insurance portion of "fringe benefit" packages is a little more than five dollars for each \$100 in wages and salaries, the Health Insurance Institute reported recently.

Nearly \$10.5 billion was contributed by employers and employees in 1958 to finance these fringe benefits, the Institute said in an analysis of data released by the Government.

These contributions paid for health insurance coverage for 95 million workers and dependents, life insurance for 42 million persons, pension plans for 19 million employees, and other insurance programs.

The Institute said these programs have shown considerable growth in recent years. In 1954, joint contributions of \$6.9 billion gave health coverage to 75 million persons, life insurance to 31 million, and retirement benefits to 14 million.

The largest item in the 1958 bill for these fringe benefits was the \$4.7 billion which went to finance pensions, and employers contributed five times as much money in this area as did employees. The group life insurance costs were \$1.3 billion and the health insurance costs were \$3.3 billion.

The Institute said pensions represent a sizeable percentage of payroll because they are designed to provide substantial benefits in the future, and that similarly life insurance provides big future benefits. On the other hand, said the Institute, health insurance is paying more benefits to more people in the short run.

Health insurance premiums accounted for 30 per cent of the cost of the fringe benefit package, said the Institute, and health insurance returned nearly 50 per cent of all benefits paid by these "fringes."

The Institute broke this down further for two categories of health benefits and reported that hospitalization insurance cost about 19 per cent of the full benefit package in 1958, and returned 30 per cent of all benefits paid, while surgical and regular medical insurance cost 10 per cent and returned 15 per cent.

Claremont (N. H.) Seeks a Pediatrician

The medical staff of the Claremont General Hospital is anxious to obtain a pediatrician to enter into private practice in Claremont, New Hampshire.

Claremont is a small industrial city of 15,000 located in the Connecticut River Valley on the Vermont-New Hampshire border and is 30 miles south of Hanover, New Hampshire. Its population has increased from 12,700 in 1950 to 14,800 in 1957 and is seventh from the top in growth of all New Hampshire communities. Economically, it is a small industrial city with an excellent shopping

RHODE ISLAND MEDICAL JOURNAL

area and is located in a very scenic part of the state, is near a large ski center and is surrounded by many lakes and golf courses. It has unlimited hunting and fishing facilities nearby. During the past four years it has attracted three new industries, fifteen new businesses, and has built two new schools accommodating 900 students. It has recently acquired a state-sponsored industrial park which will be constructed in the immediate future as a \$300,000.00 skeletal building available for industrial occupancy for a firm employing two to three hundred people. It is our feeling that this healthy economic climate will be further benefited by an interstate highway program which will have several exits near Claremont.

REPORT OF DELEGATES

concluded from page 531

one of medicine's highest honors, was given to Dr. Charles A. Doan, who will retire next year as dean of the Ohio State University College of Medicine and director of the Health Center in Columbus, Ohio.

In addition to Dr. Larson, the new president-elect, the following officers were named at the Thursday session:

Dr. William F. Costello of Dover, N. J., vice president; Dr. Norman A. Welch of Boston, re-elected speaker of the House, and Dr. Milford O. Rouse of Dallas, Texas, re-elected vice speaker.

Dr. Gerald D. Dorman of New York City was elected to the Board of Trustees to succeed Dr. Larson, and Dr. James Z. Appel of Lancaster, Pa., was re-elected to the Board.

Elected to the Judicial Council, to succeed Dr. Louis A. Buie of Rochester, Minn., was Dr. James H. Berge of Seattle.

Named to the Council on Medical Education and Hospitals were Dr. William R. Willard of Lexington, Ky., succeeding Dr. James M. Faulkner of Cambridge, Mass., and Dr. Harlan English of Danville, Ill., who was re-elected.

On the Council on Medical Service, the House re-elected Dr. Russell B. Roth of Erie, Pa., and Dr. Hoyt B. Woolley of Idaho Falls.

Dr. George D. Johnson of Spartanburg, S. C., was named to succeed Dr. Pickett on the Council on Constitution and Bylaws.

* * *

Several other items of lesser importance concerned the House and its reference committees in the four days of deliberation. These included pharmaceutical issues, the report of the Committee to Study the Relationships of Medicine with Allied Health Professions and Services, and Occupational Health Programs.

Full details regarding these items will be found in the current issues of the J.A.M.A.



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(Warning: May be habit-forming)		
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Average adult dose: One teaspoonful after meals and at bedtime.
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Literature on request

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THE WASHINGTON SCENE

A Report Prepared by the Washington Office of the American Medical Association

WASHINGTON, D. C. — Democrats and Republicans are campaigning on opposing planks on the issue of health care for the aged. The Democratic party advocates the Social Security approach; the Republican party favors federal aid in the field, but outside the Social Security system.

The G.O.P. plank pledged:

"Development of a health program that will provide the aged needing it, on a sound fiscal basis and through a contributory system, protection against burdensome costs of health care. Such a program should:

"— Provide the beneficiaries with the option of purchasing private health insurance — a vital distinction between our approach and Democratic proposals in that it would encourage commercial carriers and voluntary insurance organizations to continue their efforts to develop sound coverage plans for the senior population.

"— Protect the personal relationship of patient and physician.

"— Include state participation."

The key paragraph of the Democratic plank stated:

"The most practicable way to provide health protection for older people is to use the contributory machinery of the Social Security system for insurance covering hospital bills and other high cost medical services. For those relatively few of our older people who have never been eligible for Social Security coverage, we shall provide corresponding benefits by appropriations from the general revenue."

Charles H. Percy, chairman of the G.O.P. Platform Committee, stated that the reference to a "contributory system" in the Republican plank did not mean a Social Security tax.

Presidential and vice presidential candidates of both parties went into the election campaigns pledged to support the health-care-for-the-aged planks adopted by their respective conventions. Vice President Richard M. Nixon, the G.O.P. Presidential nominee, already was on record as unalterably opposed to any program of national compulsory health insurance. The long-established position of Senator John F. Kennedy of Massachusetts, the Democratic Presidential candidate, has

been "that only by use of the Social Security system can we have true health insurance."

Speaking for the American Medical Association, Doctor Edward R. Annis of Miami, Florida, appeared before the platform-drafting committee of the Democratic convention at Los Angeles, and Doctor Leonard W. Larson, A.M.A. President-elect, before the Republican policy group at Chicago.

The A.M.A. spokesmen warned both parties that a program following the Social Security approach "would be unpredictably costly; it would unnecessarily cover millions of people; it would substitute service benefits for cash benefits; it would lead to poorer — not better — quality of medical care; it would overcrowd our hospitals; it would lead to the decline, if not the demise, of private health insurance; and it would interfere dangerously with the doctor-patient relationship, which is the solid foundation upon which effective medicine must be based."

Doctor Annis also urged support of the House-approved Mills plan to provide health care for the needy aged who need help with the federal government and the states sharing the costs outside the Social Security mechanism.

In an advertisement run in some large daily newspapers in mid-August, the A.M.A. outlined its reasons for supporting the Mills plan, the ad said, in part:

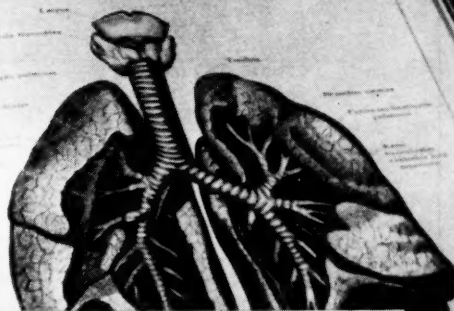
"The A.M.A. believes our nation, as well as its senior citizens, will best be served by a locally administered health aid program designed to help those who need help. . . .

"... We are equally sincere in our opposition to legislative measures that approach the problem on a shotgun basis — with the idea of increasing repeatedly the Social Security tax in order to finance health benefits for *everyone* who is covered by the Old Age, Survivors and Disability Insurance program, regardless of their need.

"There are many serious hazards in using the Social Security approach to finance medical and hospital care for our older citizens. When government starts telling the doctor how to practice medicine; telling the nurses how to nurse; telling the hospital how to handle its patients, the quality of

concluded on page 556

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ACUTE BRONCHITIS

SYNCILLIN

250 mg. t.i.d. - 6 days

H.F. 45-year-old white female. First seen on Aug. 24, 1959 with acute bronchitis of 3 days' duration. Culture of the sputum revealed alpha hemolytic streptococci. A 250 mg. SYNCILLIN tablet was administered 3 times daily. Another sputum culture taken on Aug. 27 showed no growth. On Aug. 30, the patient appeared much improved and SYNCILLIN was discontinued.

Recovery uneventful.

Actual case summary from the files of Bristol Laboratories' Medical Department

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Syncillin Tablets - 250 mg. (400,000 units)... Syncillin Tablets - 125 mg. (200,000 units)

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Complete information on indications, dosage and precautions is included in the circular accompanying each package.

BRISTOL LABORATORIES, SYRACUSE, NEW YORK



THE WASHINGTON SCENE

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medical care is sure to decline. The cost of such a program eventually would be staggering and would make a serious dent in the pay envelopes of millions of Americans covered by Social Security. Private, voluntary health insurance, which has been doing such a magnificent job, would be undermined and, in time, destroyed.

"Most important, perhaps, is the fact that such an approach would just be the beginning of compulsory, government-run medical care for every man, woman and child in the United States. For it wouldn't be long before the Federal government would be lowering the age at which people would be eligible, and adding one costly service after another to a program that would place your health care under the Federal government's thumb. . . ."

Monday, October 3. Providence Medical Association meeting. CPC, Medical Library (8:30 P.M.).

Monday-Saturday, October 10-15. American College of Surgeons meeting, San Francisco, California.

Wednesday, October 12. Columbus Day.

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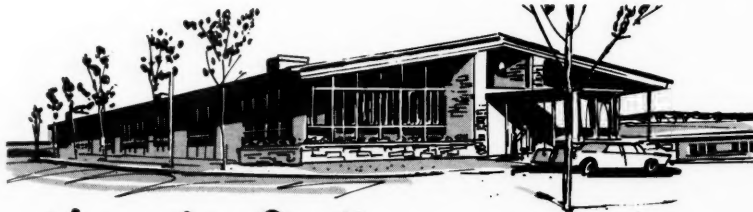
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